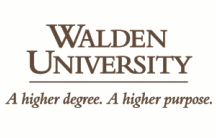

2015

Examination of ADHD Symptoms in Children of Traveling Armed Services Members

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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MA, Walden University, 2009

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Research has captured a notable increase in the diagnosis of attention deficit hyperactivity disorder (ADHD) in the United States. This increase in ADHD diagnosis is also seen in children in military communities. A gap in the literature exists regarding how military deployment affects the presentation of ADHD symptoms of children aged 3 to 15 in military families. The study examined the effect of military deployment status on children aged 3 to 15 with symptoms of ADHD. Participants were 164 military families, representative of the diversity of the military, from military bases around Southern California. Each participant responded to 2 questionnaires: a demographic questionnaire and the Vanderbilt ADHD Diagnostic Patient Rating Scale for parents. The independent variable was military deployment status (deployment > 6 months, deployment < 6 months, or no deployment) within the previous 48 months. The dependent variable was ADHD symptoms. The covariates were ethnicity, family structure, and parents' age. Results of chi-square and hierarchical logistic regression analyses showed that there was no statistically significant relationship between parents' deployment status and ADHD symptoms of children. When covariates were added to the model, only older parental age predicted higher levels of symptoms in children. Results may be used to educate all involved parties and provide effective strategies, to enhance social development, and to compensate for periods of absence.

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Dedication

I dedicate my entire dissertation and future service to God, my Heavenly Father. He restores my soul, and leads me in the paths of righteousness for His name's sake.

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I would like to acknowledge Dr. Brent Robbins, methods expert and committee chair, and Dr. Gordon Vessels, content expert and committee member for their expertise, encouragement, and counsel throughout this process. I also thank my beautiful husband who selflessly and consistently navigated this journey with me, as he lovingly kept me on task, and reminded me of my purpose and light.

Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Introduction

In this study, I explored military deployment status and symptoms of Attention Deficit Hyperactivity Disorder (ADHD) in children aged 3 to 15 from 2001 to 2010 to determine if there was a statistically significant relationship between parental absence due to military deployment status and academic performance of military children through reported and/or exhibited symptoms of ADHD. ADHD is a neurobehavioral disorder, typically beginning in childhood, and marked by developmentally inappropriate problems with attention, organization, and hyperactivity that interfere with the child's functioning in the family, social, and academic settings (*Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000) delineates three subtypes of ADHD: (a) ADHD, combined type encompassing persistent symptoms of inattention and hyperactivity (ADHD-C); (b) ADHD, predominately inattentive type, referring to children (or adults) who meet the designated diagnostic criteria for inattention but not hyperactivity (ADHD-I); and (c) ADHD, predominately hyperactive-impulsive type (ADHD-HI), denoting those who meet the criteria for hyperactivity and impulsivity but not inattention(American Psychiatric Association [APA], 2000). Of the three subtypes, the hyperactive-impulsivity subtype is the least prevalent (Tzang, Chang, & Liu, 2008). More than twice as many boys as girls are diagnosed with ADHD (Pastor & Reuben, 2008). To some extent, the gender disparity may be due to lack of recognition or misdiagnosis of ADHD in girls. Some researchers have found that girls are more likely to have ADHD-I, which is less overt, although other

researchers have reported similar proportions of boys and girls with the ADHD combined and predominately inattention subtypes (Tzang et al., 2009).

ADHD has a strong genetic component but is also decidedly influenced by environmental factors such as family stress (Derks, Dolan, Hudziak, Neal, & Boomsma, 2007; Lange et al., 2005). Features of the child's psychosocial environment affect the degree to which children who are biologically predisposed to ADHD learn to control their attention, activity, and impulsivity as well as the degree to which difficulties with these behaviors are tolerated by parents or caregivers, teachers, or other significant adults (Lange et al., 2005). According to the diathesis-stress model of the etiology and maintenance of ADHD, certain characteristics of the family environment may exacerbate the symptoms of ADHD such as intolerance of inattention, hyperactivity, impulsivity, and a lack of opportunities that encourage and support the development of self-regulation (Rydell, 2010).

Families compelled to cope with multiple stressors may be unable to provide the child with the positive and supportive structures that promote the development of healthy self-regulation (Lange et al., 2005). In contrast, positive parenting, defined by warmth, expressiveness, and support during childhood, has been linked with the development of effortful control and lower levels of externalizing behavior in adolescence (Eisenberg et al., 2005).

In research for the RAND Corporation, Chandra (2010) noted that reactions to military parent(s)' deployment can vary depending on the child's age. Younger children (the focus of most research) may not fully grasp the nature of a parent's absence due to

wartime deployment (Chandra, 2010). On the other hand, older children and adolescents, at ages 8 to 15 years old, are aware of the potential dangers their parents face. Furthermore, older children and adolescents are also frequently called upon to assume family roles and responsibilities beyond their maturity, which strain their coping resources and can have negative psychosocial and academic effects. Overall, the RAND researchers found that children whose parents had been deployed experienced more emotional problems than is typical for children in the general population as evidenced by on their own and their caregivers' reports (Chandra et al., 2010). The longer the parent has been away over the last 3 years, the greater the difficulties the children experienced during the parent's deployment and return home (Chandra et al., 2010; Lester et al., 2010).

According to a study of social competence and behavior problems in preschool and school-age children, the parents of older children, particularly those who exhibited high levels of ADHD symptoms, experienced a greater negative impact on everyday life and family burden relative to the parents of younger children (Thorell & Rydell, 2008). At the same time, the preschool children with high levels of ADHD symptoms displayed serious behavior problems associated with ADHD. Consistent with most studies of ADHD, the boys exhibited more severe symptoms of ADHD as well as related behavior problems; however, some girls did have severe ADHD symptoms and behavior problems. Based on the literature on ADHD and the small but significant body of research on military families, ADHD diagnosis should be influenced by characteristics of the family,

the child, and the nature and duration of separation due to deployment (Thorell & Rydell, 2008).

In order to maintain a strong, effective, and dedicated military force, it is essential to develop programs and services tailored to the needs of military personnel and their families to promote the resilience of the active duty (AD) and civilian family members and the family as a whole. To contribute to this goal, the present study added to existing knowledge of how parental deployment affects children who are biologically predisposed to ADHD, as well as how specific child, family, and individual parent characteristics affect the manifestation of ADHD and are important for providing military families with appropriate services and interventions.

Increases in diagnoses of ADHD have been observed across all socio-demographic groups (Visser et al., 2010). Among AD service personnel seeking mental and behavioral health services for their children, the largest proportion of visits (30.1%) were for ADHD treatment (Gorman, Eide, & Hisle-Gorman, 2010). Although this sample is not representative of AD military parents in that it only included parents whose children had behavioral or emotional health issues, there is growing evidence documenting the potentially negative impact of military deployment on children's psychosocial health and development (Allen, Rhoades, Stanley, & Markman, 2011; Barker & Berry, 2009; Chandra, 2010; Chandra, Burns, Tanielian, Jaycox, & Scott, 2008; Chandra et al., 2010a, 2011; Chandra, Martin, Hawkins, & Richardson, 2010b; Chartrand, Frank, White, & Shope, 2008; Cozza, Chun, & Polo, 2005; Davis, 2010; Esposito-Smythers et al., 2011; Flake, Davis, Johnson, & Middleton, 2009; Lester et al.,

2010; Lincoln, Swift, & Shorteno-Fraser, 2008; Paris, DeVoe, Ross, & Acker, 2010; Richardson et al., 2011). Teachers who observe children firsthand on a daily basis describe many military children as highly resilient, but at the same time they see the children's resilience being strained by the cumulative impact of prolonged and repeated deployments (Chandra et al., 2010b; Richardson et al., 2011). However, these speculations have not yet been formally studied to determine the impact of parental absence on the social development of AD children who exhibit and report experiencing mental and behavioral challenges associated with ADHD. It is important to study these phenomena to identify areas of social need for military families and to support organizations that develop programs that provide operational readiness and education to military families.

The purpose of this quantitative study was to examine the relationship between reported and exhibited symptoms of ADHD and military deployment status (military deployment of greater than 6 months, military deployment of less than 6 months, or no military deployment) of AD service members. In order to improve the quality of life for military families and to increase the academic performance of military children, it is necessary to research probable contributing factors of inattention, inability to focus, and restlessness of ADHD. In this study, I examined parental absence due to military travel and ADHD symptoms exhibited by children aged 3 to 15 in military families. Moreover, the aim of the study was to examine whether there is a significant variance in exhibited or reported behaviors of hyperactivity, inattention, and behavioral challenges between categories of ethnicity, family structure, and number of children in the household.

In this chapter, I describe the background of the study, which is followed by the problem statement and purpose of the study. The research questions and hypotheses are presented, and key theoretical constructs are defined. Next, assumptions and limitations are reviewed and important terms defined. Finally, the significance of the study is discussed. A summary concludes the chapter.

Background of the Study

Since the inception of the first volunteer American military, demographic composition and concurrent changes in attitudes toward military families of AD personnel have changed dramatically. A common slogan during the World War II era was "if the Army wanted you to have a family, they would have issued you one!" (American Psychological Association Task Force, 2007, p. 27). Today the predominant attitude is that "when one person joins, the whole family serves" (Park, 2011, p. 65). The families of military members may remain in the background, but in reality "they are critical to its success" (Park, 2011, p. 65). In order to maintain a strong, effective, and dedicated military force, it is essential to develop programs and services tailored to the needs of military personnel and their families to promote the resilience of the AD and civilian family members and the family as a whole.

More than half of all AD personnel (58%) have family responsibilities, according to the U.S. Department of Defense (DoD; 2010). According 2010 data, approximately 44%, or 625,363, AD service members had minor dependents, defined as children aged 20 or younger or 22 and younger if they were full-time students. This sizable group included single parents (5.4%), dual military couples with children (2.9%), and military

parents with civilian spouses (35.9%). The largest group of children was the youngest: infants through 5 years of age (527,670), followed by children between the ages of 6 and 11 (382,823), and adolescents 12 to 18 (284,658). In addition to the parents among the AD personnel were the reserve and guard members (selected reserve), also subject to deployment. Close to 40% of the select reserve personnel were married with children, and 9.3% were single parents (DoD, 2010). The military community includes a significant number of families with children involved in the process of navigating the critical stages of childhood and adolescent development.

In the decade since the terrorist attacks of September 11, 2001, the U.S. AD and select reserve forces have been deployed globally, with unprecedented numbers serving multiple tours in a combat zone (Chandra, 2010; Davis, 2010; Lincoln et al., 2008). In response, a wide range of organizations, including the DoD), he Department of Veterans Affairs (VA), and the American Psychological Association (APA) have invested efforts to examine and address the potential effects of military deployment on service members and their families (APA Task Force, 2007; Sheppard, Malatras, & Israel, 2010). Some of the most extensive research is being conducted by the RAND Corporation led by Chandra (Chandra, 2010; Chandra et al., 2008; Chandra et al., 2010a, 2011; Chandra et al., 2010b; Richardson et al., 2011). Speaking before the House Armed Services Subcommittee on Military Personnel, Chandra (2010a) described some of the research findings on the effects of deployments on families concerned for the safety of their loved ones, stating in her congressional testimony that arguably the most vulnerable are the children and youth left at home.

According to Chandra (2010), both the numbers of children experiencing a parent's deployment and the length of time that the parent is absent from home are unique in the history of the U.S. military. In light of this phenomenon, she emphasized the critical importance of understanding the children's health and well-being and determining the effects of the duration of the parents' deployment on the children's academic, psychosocial, and family functioning. Before the RAND research project, few researchers had explored these issues. Indeed, the RAND researchers recognize that there are still many gaps in knowledge, which include the effects of maternal deployment, effects of deployment on older children and adolescents, and effects of dual-military career and single parent families (APA Task Force, 2007; Chandra et al., 2010a; Lincoln et al., 2008).

A concurrent trend affecting families of all sociodemographic groups is the marked increase in diagnoses of ADHD among U.S. children (Visser et al., 2010). Among AD service personnel seeking pediatric mental and behavioral health services as documented through the Tricare Management Activity, visits for children with ADHD accounted for the largest segment of consultations, 30.1% (Gorman et al., 2010). Although the sample is not representative of AD military parents in that it only included parents whose children had behavioral or emotional health issues, an accumulating body of evidence documents the potentially negative impact of military deployment on children's psychosocial health and development (Allen et al., 2011; Barker & Berry, 2009; Chandra, 2010; Chandra et al., 2008, 2010a, 2010b, 2011; Chartrand et al., 2008; Cozza et al., 2005; Davis, 2010; Esposito-Smythers et al., 2011; Flake et al., 2009; Lester

et al., 2010; Lincoln et al., 2008; Paris et al., 2010; Richardson et al., 2011). Teachers of military children often see them as highly resilient, but also see the children's resilience being taxed by the cumulative impact of prolonged and repeated deployments (Chandra et al., 2010b; Richardson et al., 2011).

Deployment and frequent relocation are challenges facing military families causing increased negative stress for military families with potential negative academic and psychosocial outcomes for children (Palmer, 2008). According to Palmer (2008), relocation is one of many situations where the parents' attitudes influence the children's adaptation and psychosocial well-being.

The impact of deployment on military families has been conceptualized in terms of a cycle of deployment (Lincoln et al., 2008). The model guiding current theory and research is a reformulation in response to the prospect of multiple deployments (Chandra et al., 2011). The deployment process is divided into five stages: predeployment, extending from the time of notification to departure; deployment, covering the time from departure to return; sustainment, redeployment, and postdeployment. Each stage presents a unique set of challenges to the deployed service member and the family. Family roles and routines change according to the father's or mother's presence or absence (Palmer, 2008). Recent researchers have suggested that flexible family roles as well as the ability to perform multiple roles predict better family adjustment during the postdeployment reunion stage (Palmer, 2008). More flexible family structures are also conducive to the development of self-regulatory behaviors in children with ADHD (Lange et al., 2005).

According to Lincoln et al. (2008), while the cycle of deployment as outlined by Pincus et al. in 2005 is still pertinent, it does not sufficiently capture the rapid pace of deployment rotations characteristic of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Whereas the duration of deployment was traditionally predictable, it has become uncertain and subject to extension. In addition, AD personnel can face multiple deployments in a previously unheard of short time. Uncertainty and ambiguity intensify the stress experienced by family members during deployment (Lincoln et al., 2008).

As much as they look forward to it, the deployment reunion can be challenging to families especially in the face of physical injury or psychological distress, particularly posttraumatic stress disorders (PTSD; Cozza et al., 2005; Lincoln et al., 2008; Palmer, 2008). National Guard members, who tend to be older and more likely to have families than AD service members, seem to be at higher risk for PTSD and family adjustment problems (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010; Khaylis, Polusny, Erbes, Gewirtz, & Rath, 2011). National Guard members who have returned home with PTSD experience problems in their relationships with their spouse and their children and many guard members with PTSD report serious problems with parenting. Older service members, whether AD or National Guard, are likely to be parents of adolescents (DoD, 2010).

Statement of the Problem

Lincoln et al. (2008) have proclaimed that "having a parent sent to an active combat zone with an undetermined return date may rank as one of the most stressful

events of childhood" (p. 984). The potentially negative effects on children can be further intensified if feelings of distress and uncertainty strain the coping resources of the remaining parent. Pediatric visits for mental and behavioral disorders have been found to increase with a parent's military deployment, with children with ADD/ADHD accounting for the largest proportion of visits (Gorman et al., 2010). In general, diagnoses of ADHD have become more prevalent among U.S. children (Visser et al., 2010). The manifestation of ADHD represents an intricate interaction between biological vulnerability and environmental factors. Factors such as family stress, family structures, and parenting practices can play a pivotal role in a child's ADHD behaviors (Lange et al., 2010).

Families with children comprise a growing segment of the military community and a proportion of those families are raising a child with special needs (Gorman et al., 2010). Studies conducted over the last decade concluded that there was an urgent need for family-centered programs and services for military families raising a child with a disability (Russo & Fallon, 2001; Taylor et al., 2005). Mothers especially, who are AD soldiers, deplored the lack of adequate services and supports (Taylor et al., 2005). New and innovative programs have recently been implemented or are currently being developed. However, more programs are needed to assist military families with children, and there is a vital demand for more behavioral health professionals (APA Task Force, 2007; Richardson et al., 2011). This study provided information that may be valuable in guiding the design and development of services and programs for military families raising a child with ADHD.

Purpose of the Study

The purpose of this quantitative study was to examine the potential relationships between parental separation due to military deployment status and ADHD symptoms in children, aged 3 to 15 in the southwestern region of California during the years 2001to 2013. I examined whether the dependent variable (a) a child who reported or exhibited ADHD symptoms or (b) a child (ages 3 to 15) who reported or exhibited ADHD symptoms at any point from 2001 to 2010 was statistically related to the independent variable of military deployment status, and the covariates of ethnicity, family structure, and parents' age. This study was open to all military families in the region of Southern California, and it was expected that the sample would represent the diversity of the military, which would allow for a number of cross-comparisons.

Nature of the Study

The nature of this study was to contribute to the existing body of research. The aim of this study was to illuminate the individual and family characteristics associated with vulnerability or resilience to symptoms of ADHD for the purpose of informing the design of services, programs, and interventions for military families with a child(ren) who report or exhibit symptoms of ADHD or at risk for experiencing symptoms of ADHD.

Research Questions and Hypotheses

The present study was guided by the following research questions, which are further detailed in Chapter 3:

Research Question 1: What is the relationship between military deployment status and ADHD symptoms?

$H_0$1*:* There is no statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

H_a1*:* There is a statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

Research Question 2: What is the relationship between military deployment and symptoms of ADHD in children considering covariates?

$H_0$2*:* There is no statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered (ethnicity, family structure, parents' age).

H_a2*:* There is a statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered: ethnicity, family structure, and parents' age.

Theoretical Framework

Initially developed to identify etiology of schizophrenia, the polygenic theory, now commonly known as the diathesis-stress model, introduced the concept of premorbid symptoms in relation with poor environmental social status contributing to onset of mental illness (Gottesman & Shields, 1967). According to the diathesis-stress model, some people inherit a diathesis (a genetic susceptibility), which is incapable of initiating the disorder by itself. The central idea of the diathesis-stress model is that if susceptible individuals are exposed to stress early in life, their systems become permanently

sensitized, and they overreact to mild stressors for the rest of their lives (Pinel, 2009). This model also supports that life events can contribute to the cause of negative social responses (Lange et al., 2005). For example, as applied to this study, children who are biologically at risk could begin exhibiting symptoms associated with ADHD in response to excessive, negative stress in the home and an increase in unmet social needs due to parental absence while on deployment. Specific triggers and common environmental factors to ADHD symptoms are detailed in Chapter 2. Using the diathesis-stress model as the conceptual framework, in this study I focused on the stages of childhood through adolescence to determine if a relationship between parental absence and symptoms of ADHD exists.

According to a meta-analysis of research, children in middle childhood are the most vulnerable to problems resulting from a parent's deployment (Card et al., 2011). The RAND researchers found that older adolescents tended to experience academic difficulties while young children were prone to anxiety (Chandra et al., 2011). To very young children, a parent who has been deployed multiple times may seem like a stranger. Whether or not children of different ages are more or less vulnerable to problems is open to debate. However, children do experience the parent's absence differently based on their developmental stage (Chandra et al., 2011). These ideas are examined further in Chapter 2.

Assumptions

To measure ADHD symptoms, the Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS), a no cost, open permissions scale, was used with a basic demographic

questionnaire to measure the remaining variables (Wolraich, 1998). Although this scale does measure emotional and cognitive symptoms of other DSM-IV diagnosis, the current goal was to measure the presence of ADHD symptoms while the questionnaire identified parental absence of persons in the military. ADHD often includes oppositional defiant disorder (ODD) and other emotional issues and is challenging to manage. However, the population of interest is the children who have been or could be identified as experiencing symptoms of ADHD. Remaining emotional and cognitive disorders can be addressed in future research. The VADPRS was used in the present study to measure the known possible problems at home. The results were used to determine if survey related data could be consistent with diagnosis of ADHD. To maintain focus and integrity of research results, control for ODD and other emotional and/or cognitive disorders will be open for future research efforts. Assumptions of this study included aspects of the participant agreement to participate and fill out the associated questionnaire. The first assumption is that there would be an equal likelihood of parents of children with and without symptoms of ADHD of their opting into the study. The second assumption was that the participants would fill out the questionnaire honestly. Since both paper and online versions were used, and since confidentiality was assured, it was expected that participants answered honestly.

Limitations

Limitations of the study included self-selection bias, as the participant pool consisted of persons who volunteered to be participants of the study. As such, these participants may have varied systematically from those who did not volunteer and may

therefore have provided biased responses to the questionnaires. Another limitation relates to the use of retrospective self-report, as participants may not have accurately remembered all of the facts that they were asked to recall. The population is one of convenience; therefore, it can only be a suggested representation of the population and not conclusive. Several factors could potentially impact the results of the study such as the interaction between the research team members and the participants, unresolved emotional issues and/or internal stimuli related to military experiences, participants' ability to respond to inquiries in a nonbiased, honest manner, and participants' ability to comprehend inquiries in the survey and questionnaire. Some measures to address these limitations include considering these items while designing the questionnaire. I provided specific survey distribution instructions to the team for uniformity where possible.

Delimitations

This study was conducted in public, unrestricted areas, on volunteer basis to military affiliated persons. Participants included active duty parent(s), spouse(s) of active duty members, or an unmarried parent of an active duty member's child. This study was only available to persons who were in the vicinity of the booths where surveys were distributed, in communities outside military bases of southern California.

Definition of Terms

Caregivers: Caregivers refer to those persons who care for the children on a daily basis, in the absence of the parents, including nannies, daycare providers, and teachers (Richardson et al., 2011).

Comorbidity: For the purpose of this study, the term comorbidity refers to a mental and/or behavioral health challenge, diagnosis, or associated symptoms that are persistent and impact persons' ability to function with ADHD symptoms and/or diagnosis as the primary challenge.

Cultural background: Persons who are not citizens of the United States are permitted to serve in the military; therefore, military communities house persons representing a wide spectrum of diverse cultures including African Americans, European Americans, Hispanic Americans, Asian American, Native Americans, Samoan Americans, Indian Americans, and Island Pacific Americans (DoD, 2010).

Deployments: Active duty military deployments are time periods when the active duty service member is required to travel to another state or country as part of an organized operation to support and defend others as representatives of the United States, defined for this study as any temporary duty where the service member is transferred away from his or her home for a period of 6 months or greater (Chandra et al., 2011).

Military community: Military communities are areas where large populations of military personnel and their families reside, within or outside of military installations. Members of military communities include active duty, active duty reserve, military spouses and children, retired members, and their families (DoD, 2010).

Parent: Parent(s) refer to the persons physically and financially responsible for the care of the children, including parents who are not living in the household (Gorman et al., 2010).

Parental structures: Parental structures within a family can include two biological parents within the home, one biological parent in the home with a nonbiological parent, two nonbiological parents, one biological parent, or one nonbiological parent (DoD, 2010).

Significance of the Study and Positive Social Change

Positive social change will occur through the education of parents, caregivers, organizations, and society. Individuals who are aware of potential dangers associated with the absence of parents during critical developmental stages could have the opportunity to develop social supports and take advantage of available community resources to alleviate negative feelings such as fear, anger, anxiety, loneliness, and depression. Using substantiated reports of child maltreatment (physical abuse, emotional abuse, and neglect) among enlisted military personnel, Gibbs, Martin, Kupper, and Johnson (2007) found that the incidence of child maltreatment escalated by 42% during deployments relative to the time that the soldiers were not deployed.

The results of this study can be used to inform the development of services and supports for military families who experience deployment. The findings may also raise more general awareness of the potential negative effects of family stress on the self-perceptions and successful development of children and on other unfortunate outcomes such as parental separation and divorce. More broadly, these insights may help reduce national dropout rates and crime rates and help to cultivate strong leadership for the future.

Summary

In order to fill in the gap in the research, I examined the correlation between the frequency of military deployment travel and ADHD symptoms reported and/or exhibited in children. Moreover, the relationship of other variables, including ethnicity of the family, family structure, and parents' age, with ADHD symptoms of children were tested. Chapter 2 covers the literature review of the study, containing discussions of the trends and problems related to the topic.

Chapter 2: Literature Review

Introduction

According to a retrospective cohort study of the effects of parental military deployments on their children, the number of mental and behavioral health visits increased by 11%, behavior disorders increased by 19%, and stress disorders increased 18% (Gorman et al., 2010). This was particularly the case for married and male military parents (Gorman et al., 2010). Gorman et al. (2010) found that 30.1% of the 642,397 children aged 3 to 8 in their sample had ADHD, 14.6% had adjustment disorders, 12.1% had autism spectrum disorders, and 11.0% had speech and language disorders (Gorman et al., 2010). Based on this data, Gorman et al. speculated that children with attention deficit disorder (ADD) and autism were brought in for more consultations because the children's disorders were exacerbated the longer a parent was deployed. Since the 1980s, there has been a marked increase in the number of children in the United States diagnosed with behavioral and learning disorders, with a concurrent expansion of programs and services for this growing population of vulnerable children and youth (Pastor & Reuben, 2008). Internationally, ADHD is the most common behavioral disorder among children (Tzang et al., 2009; Visser et al., 2010). In the United States, approximately 4.7% of children between the ages of 6 and 17 years have a diagnosis of ADHD and an additional 3.7% have ADHD in conjunction with a learning disability (Pastor & Reuben, 2008). ADHD has a complex etiology, including biological and environmental factors. Therefore, a diligent developmental and family history is recommended as part of a comprehensive evaluation (Lange et al., 2005; Weiss, 2010).

Studies conducted in the last decade concluded that there was an urgent need for family-centered programs and services for military families raising a child with a disability (Russo & Fallon, 2001; Taylor et al., 2005). In particular, mothers who are AD soldiers reported a lack of adequate services and supports (Taylor et al., 2005). New and innovative programs have recently been implemented or are currently in development. However, there is general agreement that more programs are needed to serve the growing numbers of military families with children, and there is a critical demand for more behavioral health professionals (APA Task Force, 2007; Richardson et al., 2011).

This quantitative study was designed to explore potential relationships between parental absence due to military deployment and ADHD symptoms present in children of military families between the ages of 3 to 15. A review of the literature disclosed no studies specifically examining ADHD symptoms of children in military families. Therefore, this chapter is organized into two broad sections: on ADHD and on the emotional, psychological, and behavioral effects of military service and deployment on military families and their children.

The literature presented in this review is drawn from PubMed and the following EBSCO databases: Academic Search Premier, MasterFILE Premier, MEDLINE, PsycINFO, and PsycARTICLES. Keywords used either individually or in conjunction include *military, families, parents, parenting, children, caregivers, deployment, parental absence, attention deficit hyperactivity disorder (ADHD), stress, behavior, development, emotional, psychological, psychosocial, academic, programs, interventions*, and *services*.

The following section provides background information on the increasing numbers of families with children affected by military deployments.

Background

Historically, the terms military and family were viewed as almost antithetical. In the World War II era, the attitude of the military toward its service members was exemplified by the slogan "if the Army wanted you to have a family, they would have issued you one!" (APA Task Force, 2007, p. 27). A popular saying today is that "when one person joins, the whole family serves" (Park, 2011, p. 65). In the current U.S. military, more than half of all AD personnel (58%) have family responsibilities (DoD, 2010). According to data from 2010, roughly 44%, or 625,363, AD service members have minor dependents, defined as children age 20 or younger or 22 and younger if they are full-time students. This sizable group includes single parents (5.4%), dual military couples with children (2.9%), and military parents with civilian spouses (35.9%). The largest group of children is the youngest: infants through 5 years of age (527,670), followed by children between the ages of 6 and 11 (382,823), and adolescents 12 to 18 (284,658).

In addition to the parents among the AD personnel are the reserve and guard members (selected reserve), who are also subject to deployment. Among the selected reserve members, close to 40% are married with children and 9.3% are single parents (DoD, 2010). Given their older age compared to the AD personnel, adolescents comprise the largest segment of children of the selected reserve members, followed by children from 6 to 11, and infants and very young children. Children over 18 represent only a

small fraction of the dependents of either AD or selected reserve members. Thus, the military community includes a substantial number of families with children involved in the process of navigating the critical stages of childhood and adolescent development (Erikson, 1950/1993).

The terrorist attacks of September 11, 2001 marked the beginning of more than a decade in which U.S. AD and select reserve forces have been deployed globally, with unprecedented numbers serving multiple tours in a combat zone (Chandra, 2010; Davis, 2010; Lincoln et al., 2008). Some of the most extensive and ambitious research related to child health and military deployment is being conducted by Chandra and her colleagues at the RAND Corporation (Chandra et al., 2008, 2010a, 2010b, 2011; Richardson et al., 2011). Addressing the House Armed Services Subcommittee on Military Personnel, Chandra (2010) described some of the research findings on the effects of deployments on families "concerned for the safety of their loved ones," declaring that, "Arguably the most vulnerable are the children and youth left at home." Congressional testimony – no page number

According to Chandra (2010), two factors converge to make the present situation unique in the history of the military: both the numbers of children experiencing a parent's deployment and the time that the parent is absent from home are unparalleled. Prior to the research project undertaken by RAND, there were few studies exploring these issues, and the RAND researchers freely admit there are still many gaps in knowledge. Areas in which there is limited research include the effects of maternal deployment and the effects

of deployment on older children and adolescents and on dual-military career and single parent families (APA Task Force, 2007; Chandra et al., 2010a; Lincoln et al., 2008).

A number of authors have approached the topic of military families experiencing deployment from the perspective of risk and resilience (Cozza et al., 2005; Palmer, 2008; Park, 2011; Riggs & Riggs, 2011; Saltzman et al., 2011; Sheppard et al., 2010). A common theme is that military families face unique challenges and have developed unique strength and coping mechanisms. At the same time, the observations of the teachers regarding the children's reactions to a parent's prolonged or frequent absences (Chandra et al., 2010b; Richardson et al., 2011) is applicable to the spouses and other relatives of service members as well as to the family as a whole; that is, the cumulative impact of long and multiple deployments taxes the coping resources of today's military families to an unprecedented extent.

Lincoln et al. (2008) declared that, "having a parent sent to an active combat zone with an undetermined return date may rank as one of the most stressful events of childhood" (p. 984). The potentially adverse effects on children can be further intensified if feelings of distress and uncertainty tax the coping resources of the remaining parent. A virtually universal conclusion is that it is imperative to provide service members and their families with more services and supports, which in turn, entails greater understanding of the problems they face so that the programs and services and be targeted to specific needs areas.

Children's Special Health Care Needs

Using survey instruments created to identify children with special health care needs, Williams, Schone, Archibald, and Thompson (2004) investigated the prevalence and resource needs of children with special physical, mental health, and educational needs among families enrolled in Tricare Prime. Based on the results, an estimated 24% of children under the age of 18 had some type of special health care needs. While noting that the figure falls within the prevalence estimated reported in other studies, Williams et al. acknowledged that it exceeds the estimates of 15% to 17% disclosed by the same survey tools in nationally representative samples.

Demographically, children with special educational needs tended to be male and older, which is consistent with other studies (Williams et al., 2004). In contrast to some studies, Williams et al. (2004) reported findings that parents of children with special needs tended to be better educated, implying to the researchers that more educated parents may be more attuned to their child's specific needs and more predisposed to access appropriate resources. A limitation of the study was that it was not designed to identify the specific conditions for which the parents sought treatment.

Pediatric Mental and Behavioral Health Care

In contrast, Gorman et al. (2010) investigated the specific nature of children's behavioral and mental health complaints for which parents sought treatment during wartime deployment. The study also extended beyond the limited scope of Williams et al. (2004) in that the Tricare Management Activity includes data from health care visits to civilian as well as military providers (Gorman et al., 2010). At the same time, Gorman et

al. limited their data to children aged 3 through 8. This age range was chosen because children in this group often experience subclinical changes and behavior and because lead author Gorman noticed increases in behavioral issues in this age group in his pediatric practice. The parents' claims were classified according to whether they reflected pediatric anxiety disorders, behavioral disorders, or stress disorders.

The findings revealed an 11% increase in pediatric outpatient visits for mental and behavioral health care problems during the time of a parent's deployment, a figure Gorman et al. (2010) deemed clinically significant. Notably, there was an 18% increase in behavioral disorders and a 19% increase in stress disorders among the children of deployed service members. Gorman et al. found these figures especially striking given that pediatric health care visits in general decreased by 11% during the time of deployment. An intriguing finding was that children of military fathers had increased rates of outpatient visits for mental and behavioral health complaints compared to children of military mothers. However, it is uncertain whether the reason is that the children experienced more difficulty during a father's deployment or whether the civilian mothers were more sensitive to the child's problem and/or more inclined to seek treatment. According to Gorman et al., previous research has suggested that mothers staying at home may be more likely to experience their own psychological problems or transfer their psychological symptoms onto the child. However, depression on the part of either parent raises the risk that a child will manifest psychological problems. In particular, children of depressed fathers are more vulnerable to behavioral problems.

Other demographic features affecting the outpatient visits were the child's age and the parents' marital status. That is, the data showed increased rates of outpatient visits for older children and children of married parents (Gorman et al., 2010). Older children are more aware of the potential dangers of a parent's deployment, which increases the risk for psychological distress (Chandra, 2010). Gorman et al. (2010) surmised that the lower mental and behavioral health care utilization among children of single parents may be a result of their living with caregivers who are not familiar with the child's "normal" behavior and are thus unaware of behavioral changes, or who may not know where to turn for pediatric health services.

The specific aim of Gorman et al. (2010) was to determine the extent that a parent's deployment affected children's mental and behavioral health. In terms of specific disorders, however, ADHD was by far the most prevalent diagnosis. ADHD accounted for 30.1% of the mental health diagnoses, more than double the proportion of children with adjustment disorders (14.6%), the second most common problem. Thus, indirectly, the study identified a specific need area in addition to documenting that children's mental and behavioral health care needs increase during a parent's deployment.

Commenting on the study of Gorman et al. (2010), Davis (2010) concurred that a consistent finding in developmental studies is that children's psychological distress is closely associated with parental distress, which could account for the greater mental and behavioral health care utilization by married parents (particularly mothers) worried about the AD spouse's exposure to combat. Based on her own experience as a military

pediatrician, however, Davis noted that single parent families frequently obtain health care outside of the Tricare system, and those visits would not be recorded by the Tricare Management Activity. She found this a more probable explanation for the difference in mental and behavioral health care visits by married and single parents. Furthermore, based on her own professional experience, Davis commented that children of single AD parents and deployed AD mothers may have at least as much risk, if not more, of developing emotional or behavioral problems as their peers from more traditional military families.

Davis (2010) called on pediatricians to take advantage of health care visits, regardless of cause, to (a) assess family stress and coping, (b) offer anticipatory guidance for common reactions to the deployment cycle, (c) know where to locate appropriate resources, and (d) know where to refer families for specialized services (the injury or death of a parent) in response to health care providers reporting that children disclosed important stressors when asked how they feel about a father's or mother's deployment. Davis included the websites of several resources for military families with children. As more research produces greater understanding of the support needs of military families with children, including children with special mental and behavioral health care needs, these sites are likely to proliferate. The National Dissemination Center for Children with Disabilities (NICHCY; http://nichcy.org/families-community/military) provides links to resources, especially for military families.

Attention Deficit Hyperactivity Disorder

Characteristics and Prevalence

ADHD is a neurobehavioral disorder beginning in childhood. It is characterized by problems with attention, organization, and hyperactivity that interfere with the child's ability to function in the family, social, and academic settings (APA, 2000). There are three subtypes of ADHD: (a) ADHD, combined type that encompasses persistent symptoms of inattention and hyperactivity; (b) ADHD, predominately inattentive type, denoting children (or adults) who meet the designated diagnostic criteria for inattention but not hyperactivity; and (c) ADHD, predominately hyperactive-impulsive type, denoting those who meet the criteria for hyperactivity and impulsivity but not inattention. Of the three subtypes, the hyperactive-impulsivity subtype is the least prevalent (Tzang et al., 2008).

Althought boys are diagnosed with ADHD at more than twice the rate of girls (Pastor & Reuben, 2008), from 1997 to 2006, the number of U.S. girls diagnosed with ADHD increased by 4%, compared to a 2% increase in boys. This increase may reflect increasing sensitivity to ADHD symptoms in girls. To a degree, the gender disparity may be attributable to lack of recognition or misdiagnosis of ADHD in girls, who have been found more likely to have the predominately inattention subtype, whereas other studies report comparable proportions of boys and girls with the ADHD combined and predominately inattention subtypes (Tzang et al., 2009). ADHD combined with a learning disability (LD) is roughly twice as prevalent in boys (Pastor & Reuben, 2008).

There is frequently a discrepancy in reports of behavioral symptoms between teachers and parents (Derks et al., 2007; Faraone, Biederman, & Zimmerman, 2005; Mares, McLuckie, Schwartz, & Saini, 2007). One perspective is that children exhibit different behaviors at home and at school. The formal school setting demands attention, concentration, and self-discipline to a much greater degree than the informal home environment. An alternative explanation is that teachers' professional training and experience makes them more attuned to departures from behavior that is typical of children of the same developmental age. In clinical trials of stimulant medication for children with ADHD, both parents and teachers agreed that the drug was effective in reducing the children's symptoms, although there was only a low to moderate degree of convergence in their behavioral ratings (Faraone et al., 2005).

Some researchers also argue that discrepancies between parents' and teachers' reports of children's ADHD symptoms may be due to measurement errors (Faraone et al., 2005). Parents may also interpret their children's behavior in ways that diverge from clinicians' perspectives (Carpenter-Song, 2009). According to Carpenter-Song, we live in an era where "it is clear that children's actions and feelings are subject to monitoring through a lens of pathology in ways unique to this historical moment in the United States" (p. 64). The soaring rates of diagnoses of ADHD correspond to the growing acceptance of stimulant medications as treatment for ADHD. The concurrent trends of increasing diagnoses of behavioral and emotional problems in children and youth and increasing reliance on pharmacological treatments have been said to exemplify the "medicalization" of problems historically labeled as moral or even criminal

transgressions. While the medicalization of psychological and behavioral disorders is certainly preferable to moral stigmatization and facilitates the use of empirically supported some effective treatment approaches, on the other side there are critics who argue that children are over-diagnosed as having ADHD or other disorders and inappropriately medicated.

In her ethnographic research, Carpenter-Song (2009) observed a diverse range of perspectives on the child's diagnosis. While some families easily embraced the medical diagnosis, others were skeptical of its validity. A notable finding was that the European American families were the most accepting of the biomedical explanations, using clinical terms such as "disorders" and "episodes" while the African American families were more inclined to eschew the clinical terminology in favor of terms such as "challenges," "issues," and "difficulties" in describing their child's behavioral or emotional problems (p. 79).

Inequitable and discriminatory experiences with the health care system based on race and ethnicity have been widely documented, and according to Carpenter-Song (2009), probably influenced the perceptions of the African American and European American families toward their children's diagnosis and treatment. It is uncertain whether similar discrepancies in perspective would be found in military families where all service members have access to Tricare and the growing number of programs for families with children. However, there may be ethnic differences in parenting practices and attitudes toward a child's behavior that could influence the manifestation and treatment of ADHD.

It is also possible that families who view their child's behavioral or emotional problems as "challenges" or "difficulties" may ultimately be more resilient. Parents may feel "resigned" to a child's clinical diagnosis but they may view a "challenge" as something that can be overcome. Expressing that viewpoint does not necessarily mean that a family rejects clinical or pharmacological treatment, which may be intrinsic to successfully meeting or overcoming the challenge. In recommending a thorough assessment of child and family risk and protective factors as part of a comprehensive evaluation for ADHD, Weiss (2010) commented, "Perhaps the most important and most often missed aspect of psychiatric assessment is that we are trained to be pathology sensitive" (p. 4). She emphasized that from the client's perspective, the "identification and reinforcement of strengths and successes sets a tone and models a positive experience."

Weiss (2010) and Davis (2010) both shared the perspective that understanding the needs of children with emotional and behavioral disorders demands attention to individual and environmental factors beyond the clinical diagnosis including nutrition, sleep, school social and academic issues, family discipline, and parents' frustration. In the case of military families, child and family functioning and psychological health includes knowledge of the effects of deployment on the family members at all stages of the deployment cycle.

In the United States, the only reported ethnic variation in ADHD is that the prevalence is lower in Latino families. According to data from the 2004-2006 National Health Interview Survey (NHIS), Latino children were less likely to be diagnosed with

ADHD than either white or African American children (Pastor & Reuben, 2008). However, 2007 national data from the CDC's National Center for Health Statistics data showed increases in ADHD among Latino children, although the prevalence was still lower for Latino children than the prevalence for other ethnic groups (Visser et al., 2010). The researchers proposed that the increase might reflect more acceptance of the ADHD diagnosis among Latino families, better access to health care, or a combination of both.

Higher income is generally an advantage in the accurate diagnosis and treatment of ADHD and consequently for long-range outcomes (Weiss, 2010). The role of socioeconomic status (SES) in the prevalence of ADHD is less consistent. According to the NHIS, ADHD without the presence of LD was most common in children whose mothers had completed high school but not college, although older children with only ADHD tended to have the most highly educated mothers (Pastor & Reuben, 2008). ADHD combined with LD was most common in children with the least educated mothers and also in families headed by single mothers. Diagnosed ADHD is more common in families with health insurance, although the critical factor appears to be access to health care rather than SES; ADHD diagnoses are equally prevalent in children with private insurance and Medicaid.

National surveys consistently report that the financial cost of ADHD weighs heavily on families, schools, and the health care system (Pastor & Reuben, 2008). A 2006 estimate by the NCHS placed the number of school-aged children (aged 5-17 years) with diagnosed ADHD at 4.5 million. Schools report that the number of children with ADHD in special education programs is growing rapidly. According to parents' reports,

there was a gradual but definite increase in the number of children with ADHD between 2003 and 2007 (Visser et al., 2010). Children of military families have the advantage of access to Tricare, which provides families with generous benefits for mental health consultations (Davis, 2010). On the negative side is the need for more programs and services specifically tailored to the psychosocial health issues of families and children in the face of multiple deployments (APA Task Force, 2007; Chandra, 2010; Richardson et al., 2011). In general, more research is needed into the psychosocial factors that contribute to the development of ADHD.

Family Influences

According to Lange et al. (2005), the diathesis-stress model of ADHD postulates that families, schools, and peer groups that show negative and punitive attitudes toward inattention, impulsivity, and hyperactivity and provide minimal support for the development of self-regulation skills are likely to maintain or intensify symptoms of ADHD in vulnerable children. Conversely, social systems that are more accepting of inattention, impulsivity, and hyperactivity and which provide opportunities for developing self-regulation skills are more likely to help biologically vulnerable children develop self-discipline and control. Within the diathesis-stress model, there are several specific assumptions. With respect of families, the model proposes that families struggling to cope with multiple stressors with minimal social support and decreased quality of life may display parenting styles and patterns of family interaction that adversely affect children who are vulnerable to ADHD and experience decreased parenting satisfaction. Furthermore, parents who reflect these characteristics often have

childhood histories of ADHD symptoms. In addition, they may experience psychological distress as a result of parenting a child with ADHD.

Lange et al. (2005) noted that there is some evidence supporting the hypotheses within the diathesis-stress model although it is by no means conclusive. The researchers also raised the question of whether parents of children with other behavioral or emotional disorders report problems similar to parents of children with ADHD. To explore these issues, Lange et al. compared the responses of parents of children with ADHD with those of parents whose children with other emotional disorders (such as depression or anxiety) and a control group of parents of children with no emotional or behavioral disorders. The sample consisted of 22 mothers and 13 fathers of 22 boys who scored above 63 for externalizing behaviors on the Child Behavior Checklist (CBCL), and who had a DSM-IV diagnosis of ADHD; 20 mothers and 15 fathers of 20 boys with high scores for internalizing behaviors on the CBCL and a DSM-IV diagnosis of major depression, dysthymia, or an anxiety disorder; and 26 mothers and 16 fathers of 17 boys who served as the control group.

Beyond the child evaluations, the parents were assessed on family life events, perceived social support, quality of life, family functioning, parenting styles, parenting satisfaction, general health, and their perceptions of ADHD symptoms in their own childhood. As Lange et al. (2005) anticipated, the two groups of parents whose children had ADHD or emotional disorders reported higher levels of stress, more limited social support, and diminished quality of life compared to the control group parents. Additionally, the parents of children with clinical diagnoses reported a greater degree of

family stress. However, there were no discernible differences in the problems reported by the parents of children with ADHD and emotional disorders. That is, the parents of children with ADHD did not experience more difficulties with behavioral control as one might intuitively expect, and the parents of the children with emotional disorders did not exhibit more problems in the domains of emotional expressiveness and involvement.

With regard to parenting styles, there were no differences in the parenting practices of the families of origin of the three groups of parents and the only group distinction was that the families of children with ADHD were more inclined toward authoritarian parenting (Lange et al., 2005). As expected, the parents of the two clinical groups of children experienced lower parenting satisfaction compared to the control group parents and interestingly, the parents of children with ADHD and emotional disorders also reported higher parenting satisfaction in their family of origin than in their present families. This last effect was especially pronounced for the parents of children with ADHD. According to Lange et al., their findings were largely consistent with prior research on the psychosocial factors linked with ADHD and supportive of the diathesis-stress hypotheses. The most striking finding was the remarkable similarity in the psychosocial profiles of families of children with ADHD and emotional disorders.

Schroeder and Kelley (2009) investigated the relationships between the family environment, parenting style, and executive functioning in children with and without ADHD. Executive functioning is conceptualized as having two dimensions: metacognition and behavioral regulation. Metacognition encompasses the ability to organize, plan, and solve problems via control of working memory. Behavioral

regulation denotes the capacity to control one's own behavior and emotions, display appropriate regulations of thoughts, emotions, and actions, and adapt to changes as they occur in problem-solving tasks. By definition, children with ADHD have deficiencies in one or more of those capabilities (APA, 2000).

In longitudinal research on children's externalizing behaviors, Eisenberg et al. (2005) found that positive parenting, defined by warmth, expressiveness, and support, during middle childhood, translated into lower rates of externalizing behaviors in adolescence. Positive parenting was specifically linked with effortful control, which encompasses the two dimensions of executive functioning. Schroeder and Kelley (2009) cited the research of Eisenberg et al. (2005), as well as other studies with similar findings as inspiration for their own research. The participants in the study of Schroeder and Kelley (2009) were 134 parents or guardians of children between the ages of 6 and 12, including 29 children with ADHD and 105 children without ADHD. Most of the parents in the predominately Caucasian sample were biological mothers. The instruments used for the study included the Behavior Rating Inventory of Executive Function (BRIEF) Parent Form, the Parent-Child Relationship Inventory (PCRI), and the Family Environment Scale (FES).

Not unexpectedly, the parents of children with ADHD portrayed their children as being significantly lower in behavioral regulation and metacognitive ability than the children without ADHD (Schroeder & Kelley, 2009). Also consistent with prior research, the parents of children with ADHD reported a greater degree of family conflict and more limited family organization. The only difference in parenting practices was that

the parents of children with ADHD engaged in lower limit setting than the parents of children without ADHD. According to Schroeder and Kelley, a plausible reason for the similar parenting practices in the two groups of parents is that both groups were drawn from parent support groups and children's extracurricular activity groups, suggesting that they were actively committed to being successful parents.

Similar to the findings of Eisenberg et al. (2005), Schroeder and Kelley (2009) noted that a greater degree of family expressiveness, organization, and cohesion, along with lower family conflict and more parental limit setting were significantly linked with superior behavioral regulation in the children without ADHD. Additionally, greater family cohesion and organization were significantly linked with superior metacognitive capacity. However, the features of the family environment and parenting practices showed no comparable association with executive functioning in the children with ADHD. Neurobiological factors related to ADHD might play some role in this distinction, but the reasons for the lack of association between family factors and executive functioning in the children with ADHD is unclear. Another plausible explanation is that the small number of children with ADHD might have decreased the statistical power to discern such associations.

ADHD Subtypes

Tzang et al. (2009) observed that despite the recognition of subtypes of ADHD and the evidence documenting relationships between ADHD and parenting stress, there has been minimal research into the associations between parenting stress and specific subtypes of ADHD. ADHD has similar prevalence among children in Asian societies

and Western societies, and the researchers approached their studies of Taiwanese families from a cross-cultural perspective. The sample of 109 families was drawn from consecutive visits to a child-adolescent psychiatry by families with a child between the ages of 7 and 12 with a formal diagnosis of ADHD. Subsequent assessments of the children and parents were performed using the Mini International Neuropsychiatric Interview Kid (MINI Kid), the Parenting Stress Index (PSI), and the Symptom Checklist-90-Revised (SCL-90-R). Out of the 109 children, 68 were classified as ADHD-combined subtype and 41 were classified as ADHD-inattentive subtype.

The findings revealed that the parents of children with the ADHD-combined subtype were significantly more distressed than parents of children with primarily inattentive ADHD (Tzang et al., 2009). Specifically, the parents of children with ADHD-combined had higher scores on the Global Severity Index (GSI) and Positive Symptom Total (PST), as well as on the parental stress indicators of depression, parental detachment, and diminished sense of competence, and the environmental stress factors of marital discord, role restriction, social isolation, health, and overall life stress. Additionally, the parents of children with the combined subtype were younger and had more limited understanding of ADHD. SES did not differ significantly between the two groups of families, which according to Tzang et al. is consistent with some studies but contrasts with others. Compared to their peers with the inattentive subtype, the children with the combined ADHD subtype scored substantially higher on distractibility and hyperactivity, demandingness, and mood instability (Tzang et al., 2009). Furthermore, close to two-thirds (64.7%) of the children with ADHD-combined also had comorbid

ODD and overall, three-quarters of the children in that group had a concurrent disorder. Not unexpectedly, the children with the combined subtype also experienced more problems with peer relationships. Given the strong relationship between the severity of symptoms of children with ADHD-combined and the psychosocial stress of their parents, Tzang et al. advocated interventions that simultaneously target the needs of parents and children. To accomplish this would entail conducting assessments of parenting stress and psychological health in the parents of children with ADHD as well as a thorough evaluation of the child's specific symptoms. The poor understanding of ADHD by the parents with the combined subtype suggests they may be confused by the multiplicity of symptoms their children exhibit and indicates a clear need for accurate information as an integral part of a family intervention.

ADHD and ODD

Based on their findings, Lange et al. (2005) recommend a thorough family assessment for families of children with ADHD or emotional disorders with the aim of providing a multifaceted intervention targeting the child's symptoms and the family factors that may work to sustain or exacerbate them, Given the similarities in the families of children with both types of clinical diagnoses, the researchers proposed that there might be a group of psychosocial factors that are common to several behavioral and emotional disorders in children. Rydell (2010) examined family factors related to the manifestation of ADHD and oppositional defiant disorder (ODD) in a community sample drawn from two regions of Sweden. The random sample of 1,206 10-year old children was 52% male, with the vast majority (93%) of the children having at least one sibling.

Most of the children lived with both biological parents, whose educational level was relatively high. In addition to socio-demographic characteristics and ADHD and ODD symptomology derived from DSM-IV criteria, the parents were asked about negative life events affecting the child and the family.

In terms of socio-demographic factors, children who resided in single or stepparent families, whose mothers had low educational attainment, and whose families were of non-European heritage were more likely to exhibit high levels of symptoms of ADHD and ODD (Rydell, 2010). It is uncertain the extent that the findings for ethnicity, which was specifically linked with ODD, would generalize to the far more diverse U.S. society. Most of the non-Europeans were immigrant families from the Middle East, with smaller numbers from Asia, Africa, Indonesia, and South America. Additionally, many were refugees, which added to the stress associated with immigration.

ADHD, however, was strongly linked with living in a single parent or stepparent family, and this occurrence is probably more applicable to the U.S. population (Rydell, 2010). Among U.S. military families, children do not necessarily live with the civilian parent during a parent's deployment (Richardson et al., 2011). According to teachers, children may live with a broad variety of caregivers, including stepparents, grandparents, extended family members, neighbors, or friends. Some children may even move several times during the parent's deployment, an occurrence that is especially prevalent for children who display behavioral, emotional, or psychological problems that the caregiver feels poorly equipped to handle. The teachers and school staff interviewed by Richardson et al. (2011) were acutely aware of the adverse academic and psychosocial

implications of the instability these children experience. Implicit in these accounts is the probability that children with genetic vulnerability to ADHD are at especially high risk under these circumstances.

The most striking finding in the Swedish study was that adverse life events, particularly family conflicts, heightened the risk of ADHD and ODD above the effects of socio-demographic factors, but socio-demographic factors had little moderating effects on adverse life events (Rydell, 2010). Boys appeared to be more susceptible to stress than girls. Due to some biogenetic components associated with ADHD, Rydell (2010) had expected socio-demographic factors to have less influence on ADHD than ODD, but that was not the case. To Rydell (2010), the most notable finding was the powerful impact of family stress on the children's development of disruptive behaviors.

Rydell (2010) noted that teachers, but not necessarily parents, tended to report a greater prevalence of ODD symptoms in boys compared to girls. There has consistently been difficulty with the ADHD diagnosis in terms of problems related to comprehensive and accurate assessment (Weiss, 2010). Derks et al. (2007) approached the question of whether gender differences in the prevalence of ADHD and ODD could be a reflection of measurement bias. In addition, the researchers explored prospective gender differences in the genetic and environmental influences on the manifestations of the two behavior disorders. The study was part of an ongoing research project on development and psychopathology involving registrants of the Netherlands Twin Registry. The Dutch twins were all from a 1992-1996 birth cohort who were deemed nationally representative at age 3 based on their scores on the CBCL and were subsequently assessed by their

teachers at age 7 using the Conner's Teacher Rating Scale-Revised: Short Version (CTRS-R-S). The sample consisted of 800 male and 851 female 7-year old twins.

The teachers' appraisals of ADHD and ODD behaviors were consistent for boys and girls, therefore showing no indication of bias (Derks et al., 2007). Rather, Derks et al. (2007) construed this finding as evidence that boys were more susceptible to ADHD and ODD than girls. For children of both genders, more than half the variance in ADHD and ODD could also be attributed to environmental and genetic factors. However, different genes appeared to play a role in the gene expression of ADHD and ODD in girls and boys. The study did not explore specific environmental influences in behavior, except to conclude that the variance in ADHD and ODD that was not accounted for by genetic factors was attributable to unique environmental factors. Derk et al. acknowledged that their finding for different genetic influences in girls and boys in the teachers' appraisals contrasted with parents' reports of their children's behavior. They ascribed the discrepancies in the reports of parents and teachers to the differences in the home and school environments.

ADHD and Emotional Disorders

Anxiety is a common problem among children whose parents are or may be deployed (Chandra et al., 2008, 2010a, 2010b, 2011; Chartrand et al, 2008; Esposito-Smythers et al., 2011; Flake et al., 2009; Gorman et al., 2010). The uncertainty inherent in a parent's deployment during wartime understandably heightens the risk for anxiety. For children whose parents are not currently deployed, the prospect of deployment may induce anxiety. According to Lange et al. (2005), anxiety and ADHD may have common

family risk factors. Hammerness et al. (2010) observed that there is growing evidence of a bidirectional overlap between ADHD and anxiety disorders in children. Studies in the United States and internationally have documented a remarkably high incidence of comorbidity between the two disorders, roughly 30%. Despite this finding, the association between ADHD and anxiety is unclear. Further complicating the issue is the limited research into anxiety disorders in children; in pediatric studies anxiety disorders are often lumped together under the umbrella of "internalizing" disorders, which precludes precise understanding of the nature and prevalence of the symptoms the children experience.

In addition, anxiety and ADHD require different treatments, and there is even the risk that the respective medications prescribed for ADHD and anxiety disorders may adversely affect the symptoms of the other disorder. In view of these factors, Hammerness et al. (2010) emphasized that better understanding of the nature and degree of the overlap between ADHD and pediatric anxiety disorders is clearly warranted. Such findings could have important implications for the children of military families who may be at higher risk for both anxiety and ADHD.

The sample for the study was composed of children referred to a pediatric psychopharmacology program (Hammerness et al., 2010). Out of the total sample, 253 children met diagnostic criteria for an anxiety disorder without comorbid ADHD, 704 children were diagnosed with an anxiety disorder plus comorbid ADHD, and 511 children were diagnosed with ADHD without comorbid anxiety disorders. The diagnoses were derived from the mothers' appraisals using the Schedule for Affective Disorders and

Schizophrenia for School-Age Children—Epidemiologic Version (K-SADS-E). The findings revealed that the prevalence, age of onset, and symptom severity of individual anxiety disorders in the children were not affected by the presence or absence of ADHD. At the same time, the presence of ADHD in conjunction with anxiety had a decisively negative impact on the school performance of the children with the comorbid conditions. Children with comorbid ADHD and anxiety required significantly more help with their schoolwork and had double the probability of being placed in special education. Children whose primary diagnosis was ADHD were also more likely to be placed in special education if they had comorbid anxiety. These findings led Hammerness et al. (2010) to propose that the coexistence of ADHD and anxiety may produce more severe cognitive impairment.

There was a marked contrast in the proportion of children with anxiety with and without ADHD who received mental health treatment. Whereas 80% of the children with comorbid anxiety and ADHD received treatment, only about half of those with anxiety alone received treatment, which according to Hammerness et al. (2010) supported other research concluding that pediatric anxiety is often neglected. While the findings showed that anxiety and ADHD are independent of one another, they also demonstrated that children with comorbid ADHD and anxiety disorders are at heightened risk for academic difficulties.

ADHD and Academic Performance

Biederman et al. (2004) explored the impact of ADHD and deficits in executive function on children's academic performance using data from two family studies of

ADHD. Identical in design, the two studies involved children and adolescents with or without ADHD who were between the ages of 6 and 17 at the time of the initial assessment. The boys were assessed four years later. The sample used for analysis consisted of 121 male proband participants with ADHD, 103 male control group participants, 138 female proband participants, and 122 female control group participants. The children were given a battery of psychiatric, psychosocial, cognitive, and neuropsychological assessments.

Not unexpectedly, the children and youth with ADHD had a higher incidence of executive function deficits than the control group participants (Biederman et al., 2004). Furthermore, among the participants with ADHD, the presence of executive function deficits heightened the risk for LD, grade retention, and lower academic performance. The analyses also revealed that the children and adolescents with ADHD and executive function deficits came from lower SES backgrounds than those with ADHD but no executive function deficits. Broadly, this finding was consistent with the higher prevalence of coexisting ADHD and LD in children whose mothers have low educational attainment (Pastor & Reuben, 2008).

Discrepancies between teachers' and parents' ratings of children's behaviors are commonplace (Derks et al., 2007; Faraone et al., 2005). Mares et al. (2007) addressed the question of whether executive function deficits in children with ADHD differ between the home and school setting. Using parents' and teachers' responses to the BRIEF, the researchers carried out a secondary data analysis on the assessment information of children and adolescents seeking treatment from a Toronto psychiatric

program specializing in ADHD. The assessment data also included the CTRS-R as well as the ADHD Rating Scale-IV. The sample consisted of 240 children and adolescents ranging in age from 5 to 15.

The key findings according to Mares et al. (2007) were that the teachers reported a greater extent of severity and variety in the children's executive function deficits and that critical executive function deficits were risk factors for ADHD. The findings implied that either the teachers are better equipped to identify executive function impairments than parents or that executive functions pose more of a problem at school than at home. Mares et al. found evidence to support both explanations. They noted that teachers' appraisals of children's ADHD symptoms tend to be more concordant with direct observations of the children's behavior than parents' ratings. Both parents and teachers regarded problems with planning and organizing as key indicators of ADHD.

The overall findings implied a need for consistent communication between home and school in view of the fact that not only do teachers appear to be more attuned to children's difficulties with executive functioning, but these difficulties have more serious implications for academic, behavioral, and social problems in the structured school environment (Mares et al., 2007). The teachers interviewed by the RAND researchers appeared to be highly sensitive to changes they observed in their students during the parents' deployment (Chandra et al., 2010; Richardson et al., 2011). In most cases, however, the teachers and school staff were not kept abreast of the parents' deployment status and had very limited connections with military installations and minimal knowledge of resources for military families (Richardson et al., 2011). Thus, while the

teachers and school staff desired to help their students with emotional and behavioral problems, there remained a disconnect between the school and the military which was a major obstacle to helping the children secure appropriate intervention.

ADHD and Social Competence

Thorell and Rydell (2008) examined the relationships between social competence and behavior problems and children's gender and age in preschool and school-age children. Social competence was assessed via the Social Competence Inventory (SCI) developed by Rydell and colleagues. The SCI has two subscales measuring pro-social orientation (the ability to engage in positive peer interactions) and social initiative (the ability to initiate and participate in social interactions). The Strengths and Difficulties Questionnaire was used to assess negative impact on the child's everyday life and family burden associated with behavioral and emotional problems. The sample consisted of 60 children who scored high on ADHD symptoms and 499 comparison children. As in Rydell's (2010) study of ADHD and ODD, the children did not meet the full diagnostic criteria for ADHD.

The key finding, according to Thorell and Rydell (2008) was that there was no main effect for age or group status on the children's behavior problems. Nonetheless, the parents of older children, especially those who were high in ADHD symptoms, reported a greater negative impact on everyday life and family burden relative to the parents of younger children. Gender did have effects on both ADHD and behavior; overall, the boys displayed more severe symptoms of ADHD as well as related behavior problems. Implicitly, the gender differences supported the assumption that girls with ADHD are less

likely than boys with ADHD to exhibit high levels of hyperactivity or impulsivity. At the same time, Thorell and Rydell noted that there were substantial differences in externalizing behavior and the negative effects of behavior problems between girls with high levels of ADHD symptoms and the girls in the comparison group.

To Thorell and Rydell (2008), the most significant finding was that the preschool children with high levels of ADHD symptoms exhibited serious behavior problems associated with ADHD, thus implying that behavior problems should not be considered simply a long-term consequence of untreated ADHD, given that they are present at a very young age. The researchers proposed that conceptualizing preschool ADHD as a "highly complex condition with elevated levels of several different types of comorbid deficits" might be advantageous for more accurate and appropriate diagnosis and treatment (p. 593).

Deault (2010) conducted a review of empirical research from 2000-2008 examining parenting factors related to children's ADHD, with special emphasis on the development of comorbid internalizing and externalizing behaviors, along with functional impairments in the academic and social environment. A total of 22 studies, consisting of 18 correlational studies and 4 longitudinal studies met Deault's inclusion criteria. The overall findings disclosed that ODD, rather than ADHD, was more closely related to negative parenting practices and family conflict. At the same time there were some inconsistencies regarding the specific parent attributes and parenting practices associated with particular behavioral problems depending upon the research design and informants. Deault noted that while there was ample evidence supporting the association of factors

potentially linked with oppositional and conduct problems in children with ADHD, notably parental ADHD, maternal depression, less positive parental involvement, and a greater degree of family conflict, the specific relationship patterns remained uncertain.

One of Deault's (2010) observations was especially relevant to the situation of children with deployed parents, namely the implication of her findings that "families of children with ADHD may be dealing with challenges that go beyond the symptoms of ADHD alone" (p. 182). She emphasized that it is important to understand the issues parents are struggling to cope with in creating successful interventions. Parenting training has empirical support as an integral component of interventions for ADHD. Furthermore, the characteristics of children and parents are both significant factors in the effectiveness of behavioral and psychosocial interventions. Davis (2010) noted that mothers' and fathers' depression has been linked with emotional and behavioral problems in children, although each one might affect children differently, especially children of different genders.

The overall implication of the research reviewed in this chapter is that effectively treating ADHD in children involves collaboration between families and schools as well as interventions tailored to the specific needs of the child, the family, and the mother's and/or father's psychosocial distress. In reviewing psychosocial therapies for preschool children with ADHD, LaForett, Murray, and Kollins (2008) concluded that the most effective interventions are individually tailored and delivered, developmentally appropriate, and multifaceted. LaForett et al. recommended an ecological approach that ensures that the behavioral and social skills young children learn as part of the

intervention are reinforced both at home and at school. Thorell and Rydell (2008) stressed the importance of early identification and intervention for preschool children who display behaviors associated with ADHD.

Military Families

Deployment is one of several challenges unique to military families that can be viewed from the perspective of risk and resilience. The factors outlined by Palmer (2008) related to risk and resilience in parent-child relationships include frequent relocations, diagnosis of military member of posttraumatic stress disorder (PTSD), deployment, and the deployment reunion. Indeed, focusing only on the time the parent is absent is inadequate for understanding the impact of deployment on families because all phases of the deployment cycle place unique stress on family members that can affect children's psychological and behavioral health (Davis, 2010; Riggs & Riggs, 2011).

Family Relocation

The frequent moves that are common in military families are often framed as a source of family stress and potential negative academic and psychosocial outcomes for children. Overall, however, research findings are inconsistent, and some studies have shown that families develop superior coping skills and resilience as a result of relocations, with positive benefits for both children and parents (Palmer, 2008). According to Palmer (2008), relocation is one of many situations in which the parents' attitudes influence the children's adaptation and psychosocial well-being.

Finkel, Kelley, and Ashby (2003) explored the relationship of maternal and family factors and geographic mobility to the psychosocial health of children from

military families. The participants were 86 mothers and their children from traditional military families in which the father was an AD service member. Most of the fathers were career military personnel. The results supported the assumption that the longer the children lived in their present location, the more favorably they saw their peer relationships and the less loneliness they experienced. At the same time, having a close and trusting relationship with the mother and cohesive family bonds appeared to protect the children against loneliness and concerns about how they were viewed by their peers. Finkel et al. noted that most of the children were approaching adolescence, when the peer group takes on heightened importance. Higher perceptions of family cohesion were linked with higher self-esteem in the children.

In the same way that positive mother and child relationships buffered against the potentially negative effects of mobility, depression on the part of the mother translated into feelings of sadness, anxiety, and withdrawal in the children (Finkel et al., 2003). Indeed, there is an abundant body of research linking mothers' depressive symptoms with behavior problems in children. Finkel et al. (2003) emphasized the congruence they observed between the mothers' and children's reports. Maternal distress was associated with both internalizing and externalizing behaviors in the children. The overall findings supported Palmer's (2008) conclusion that relocation per se may not be a problem for military children, but rather parent and family functioning influence the effects of relocation on children.

The Deployment Cycle

The concept of a cycle of deployment in military families was originally introduced by Logan in 1987 (Lincoln et al., 2008). The model guiding current theory and research is the reformulation by Pincus, House, Christenson, and Adler (2005) that is attuned to the prospect of multiple deployments. The deployment process is divided into five stages: pre-deployment, extending from the time of notification to departure; deployment, denoting the time from departure to return; sustainment, redeployment, and post-deployment. Each stage poses a unique set of challenges to the deployed service member and the family. For example, the AD service member must be emotionally detached during deployment and emotionally reintegrated into the family upon return. Family roles and routines change in accordance with the father's or mother's presence or absence. In fact, recent research suggests that flexibility in family roles as well as the capacity to perform multiple roles predict better family adjustment during the post-deployment reunion stage (Palmer, 2008).

Indeed, Huebner, Mancini, Wilcox, Grass, and Grass (2007) approached the issue of adolescents' (aged 12 to 18) responses to a parent's deployment from a framework of uncertainty and ambiguous loss. As Chandra (2010) noted in testimony to the House Subcommittee, younger children may not fully comprehend the nature of a parent's absence due to wartime deployment. On the other hand, older children and adolescents are acutely aware of the potential dangers to the parent. Older children and youth are also frequently called upon to take on family roles and responsibilities beyond their maturity, which strain their coping resources and can have adverse psychosocial and

academic effects. Based on the qualitative responses of the adolescents, Huebner et al. (2007) concluded that ambiguous loss is a valuable framework for comprehending the experiences of adolescents during deployment and designing suitable prevention and intervention programs addressing their psychosocial concerns, such as emotional problems, boundary issues, and relationship conflicts.

The deployment reunion can present challenges to families, especially in the face of physical injury or psychological distress, in particular PTSD (Cozza et al., 2005; Lincoln et al., 2008; Palmer, 2008). National Guard members, who tend to be older and more likely to have families than AD service members, appear to be at higher risk for PTSD and family adjustment problems (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010; Khaylis, Polusny, Erbes, Gewirtz, & Rath, 2011). National Guard members who have returned home with PTSD experience problems in their relationships with their spouses and their children, and many Guard members with PTSD report serious challenges with parenting. Many express interest in family therapy rather than individual therapy. Khaylis et al. (2011) recommended the Oregon Model of Parent Management Training (PMTO), which has demonstrated empirical success in improving parenting practices among parents who have endured traumatic events. The model is designed to coach parents in developing positive parenting skills that enable them to provide a warm, structured family environment amidst family stress. PMTO is presently being tailored to fit the needs of military parents returning from combat deployment.

The need for parenting programs tailored to the needs of military families is highlighted by a documented increase in child maltreatment among military families

during combat deployment (Gibbs, Martin, Kupper, & Johnson, 2007). Using substantiated reports of child maltreatment (physical abuse, emotional abuse, and neglect) among enlisted military personnel, Gibbs et al. (2007) found that the incidence of child maltreatment increased by 42% during deployments relative to the time that the soldiers were not deployed. Child neglect was more prevalent, and moderate to severe child maltreatment increased by more than 60% during combat related deployment. In these cases, the perpetrator was the civilian mother, underscoring the importance of family programs and resources during the time of deployment. Allen et al. (2011) explored stress in 300 married couples consisting of an AD U.S. Army husband and a civilian wife in which the husband had been deployed during the previous year. On average, the couples reported moderate degrees of stress in virtually all the dimensions examined with the interesting exception of fidelity. It is noteworthy that the issues causing the most stress to the couples were related to combat, death, physical or psychological injury, loneliness, and the effects of deployment on the children. The wives reported significantly higher stress than the husbands. Palmer (2008) pointed out that military training is designed to promote resilience and inoculate soldiers against stress. At the same time, the training and military culture may make military personnel less willing to acknowledge stress. Allen et al. (2011) conceded that several factors independently or in conjunction could account for the difference in stress reported by husbands and wives including gender, military versus civilian status, or simply the uncertainty and lack of control of the situation felt by the at-home spouse compared to the more objective knowledge of risk of the military spouse.

Despite this difference, the spouses' ratings of stress were generally significantly correlated and there was a good degree of concurrence in the factors related to stress for both partners (Allen et al., 2011). Of the economic factors examined, only financial strain (as opposed to actual income) was associated with stress. Family problems magnified stress. In particular, the women who felt their children were experiencing more psychological problems reported more stress. Based on other research, however, it was probable that the stress of the mothers and the children's psychological problems were interrelated and operated bi-directionally (Davis, 2010; Finkel et al., 2003). Allen et al. (2011) were surprised that interactions with other Army couples had no relationship to stress. At the same time, they observed that the participants who experienced more stress also expressed a need for additional support while perceived support worked to mitigate stress. This finding led Allen et al. to propose that many military couples may not be aware of the available resources, or that the existing resources are inadequate. The existing evidence supports both explanations.

Riggs and Riggs (2011) proposed using a family systems model based on attachment theory as a framework for understanding risk and resilience in military families throughout the deployment cycle. The authors emphasized that reunions with children can present unique challenges. They surmised that children with secure attachment bonds before deployment would capably adapt and resume a positive relationship with the deployed parent. Conversely, children with insecure attachment would be at elevated risk for psychosocial problems such as severe separation anxiety, anger, depression, or oppositional behavior. Indeed, for all family members, secure

attachment bonds should promote adjustment, while insecure attachment may make reintegration more difficult. Barker and Berry (2009) used attachment theory as a framework for examining young children's psychological responses to multiple deployments. Kelley et al. (2001) investigated behavior problems in children with deployed mothers from an attachment perspective.

Military Deployment Versus Other Employment Absence

Kaczmarek and Sibbel (2008) observed that in addition to military deployment, other professions cause parents to be separated from their families on a consistent basis. Fishing and mining, for example, also carry hazards, although these differ from the dangers of combat, and there are differences in the frequency and duration of absences from home. Since the 1940s, the international offshore oil industry has relied upon fly-in/fly-out (FIFO) work practices, which have since been adopted by the Australian mining industry. Typically, employees commute from a home base, spending either several days or several weeks at a time from home. Noting the lack of Australian studies examining the effects of FIFO or military deployment on families, Kaczmarek and Sibbel conducted their research with 90 primary school children and their mothers living in the Perth metropolitan areas. The children comprised three groups of 30: children of military fathers, children of FIFO miners, and a comparison community group. The overwhelming majority of the children (90%) came from two-parent families. The children were further classified according to the time their parents spent away from home during the last year (<5 months, 1 to 5 months, or >5 months).

The assessments used for the study included the Children's Depression Inventory (CDI), the Revised Children's Manifest Anxiety Scale (RCMAS), the Family Assessment Device (FAD), and a demographic questionnaire with additional family information. In contrast to the expectations of Kaczmarek and Sibbel (2008), there were minimal differences between the three groups of children. The children did not differ in terms of anxiety and depression, and the researchers observed that the father's absence per se did not adversely affect either the children's psychosocial health or the mothers' perceptions of family functioning. The contrast between these findings and the prevalence of psychosocial problems found in U.S. studies of military families appear to be due to the cumulative impact of longer and repeated deployments of the U.S. AD personnel (Chandra, 2010; Barker & Berry, 2009; Lester et al., 2010).

Effects of Military Deployment on Children

Although they contrast with most recent research from the United States, the findings of Kaczmarek and Sibbel (2008) may not be unusual. Indeed, in a meta-analytic review of research, Card et al. (2011) concluded that overall, deployment per se has very minimal impact on children's psychosocial adjustment. A total of 16 studies were included in the review. The analysis did disclose evidence of children's internalizing, externalizing, and behavior problems resulting from deployment. However, according to Card et al., the relationships were consistently small by the standards of social science; in general, deployment accounted for no more than 1% of the variation in the children's adjustment. Nonetheless, the researchers emphasized that they were not dismissing the prospect that deployment could have detrimental effects for some children. Rather, their

conclusion was that on average, children did not experience more adjustment problems. There were numerous individual reactions to a parent's deployment. Children with a biological predisposition to ADHD represent a uniquely vulnerable population.

Certain factors influenced the nature of the children's adjustment. Age, for example, affected adjustment. According to the analysis, children in middle childhood were most susceptible to problems (Card et al., 2011). Younger children were less vulnerable, and somewhat surprisingly, adolescents appeared to adapt successfully, which Card et al. attributed to their greater maturity and coping skills. Interestingly, the researchers also observed that psychosocial problems were more prevalent when they were reported by parents (either the deployed or at-home parent) rather than teachers or the children themselves. According to Card et al. (2011), teachers' assessments did not seem to be related to children's problems although they acknowledged that focus group studies such as the research of Chandra et al. (2010b) offer a more in-depth perspective. The report presented by Richardson et al. (2011) provided the teachers' responses in detail, clearly articulating the emotional, behavioral, and academic changes they observed in children exposed to multiple parental deployments. Loo (2011) explored the impact of a Navy father's deployment on the behavior and academic performance of 5- to 12-year old children from 201 families. The instruments used for the study included Family Adaptability and Cohesion Evaluation Scale IV (FACES IV) (Olsen, 2008) to gauge family functioning, the Perceived Stress Scale (PSS) (Cohen, 2009) to assess family stress, the Family Crisis Oriented Personal Scales (F-COPES) (McCubbin, Olson, & Larsen, 1991), and the Deveraux scales (LeBuffe, Naglieri, & Pfeiffer, 1960) for

assessing the children's behavior. Academic indicators included the children's prior and current mathematics and reading performance and the teachers' appraisals. The findings showed that deployment strain and problems with family functioning were linked with children's behavioral and academic difficulties as well as higher levels of family stress (Loo, 2011). The children were at particular risk for academic and behavioral problems when deployment strain occurred in conjunction with poor family functioning or coping mechanisms. Loo noted that the negative impact on the children was practically significant; for example, a child might experience a decline in reading grade from B+ to B-. Reading performance was affected to a greater degree than mathematics performance. Neither the child's age nor gender had any significant effect. Loo emphasized that the detrimental effects of deployment were primarily due to elevated levels of family stress as opposed to parental absence per se. Positive family functioning and/or coping skills served as protective factors against the potential adverse effects of the father's deployment.

Barker and Berry (2009) noted that according to the DoD Advisory Committee on Women in the Services (DACOWITS), a prevalent challenge for military families with young children has been that upon being reunited, the child does not recognize the parent returning from deployment. The researchers proposed that this issue might be symbolic of a disruption to the attachment process. A unique feature of the study of Barker and Berry (2009) is that not only did they focus on the parental attachment of young children at an early stage of development, but they also examined the effects of single and multiple deployments on the children's behavior, including attachment behavior and

prospective behavioral problems. The participants were 57 families with one or more young children (age 0 to 47 months) and an active duty soldier or activated National Guard soldier. The spouses were all participants at a family readiness group who completed at least one of two surveys (deployment and reunion).

The participants were divided into a single deployment group (SDG), comprised of 11 families that completed the deployment survey, 14 families completing the reunion survey, and 4 families completing both surveys, as well as a multiple deployment group (MDG), comprised of 15 families that completed the deployment surveys, 12 that completed the reunion surveys, and 5 families that completed both surveys (Barker & Berry, 2009). A large segment of the SDG soldiers were with a combat support battalion deployed to Iraq for 15 months, while the MDG group included many soldiers a combat service support unit surveyed during their fourth Iraq deployment. The study also included a no deployment group of 14 families that completed an adapted version of the deployment survey.

Demographically, the parents and children in the three groups were all similar in age (Barker & Berry, 2009). The SDG and MDG soldiers were also similar in the actual time they spent away from their families, given that many of the SDG soldiers had been deployed 15 months (originally planned for 12) while the MDG group experienced multiple but briefer deployments. Most of the participants were enlisted soldiers and most reported having some college experience although the education levels ranged from a high school diploma to graduate school experience. The soldiers in each group were primarily male, but each group had at least one female soldier.

In view of the children's young ages, Barker and Berry (2009) noted that the deployed parent was absent "on average, half of their lifetime" (p. 1037). Given this reality, the researchers were not surprised to discover that even after considering the children's behavior before deployment, the parent's deployment produced an increase in behavior problems. At the same time, the design of the study allowed Barker and Berry to observe that, consistent with their theory, the children experienced more behavior problems from pre-deployment to deployment as the number of deployments increased. They also observed a weaker but nonetheless important association between the children's behavior problems and the duration of the parent's absence from home.

Barker and Berry (2009) described their findings as preliminary due to factors such as the small sample size and the lack of a standardized behavior scale. However, they also included qualitative responses from the participants that provide insight into the effects of deployment(s) on military families. Some comments suggested resilience and suggested the families became closer as a result of the parent's deployment. Many respondents emphasized the importance of communication among family members. Advice to other families with young children included keeping the child involved in play groups and social activities, being sensitive to the children's stress and providing them with support, and keeping the deployed parent in the child's life through photographs and talk about the deployed parent.

There were also many comments describing a plethora of emotions experienced by the children, including anger and fear (Barker & Berry, 2009). Although confusion and distress were common reactions by the young children to their parent's reappearance,

most children adjusted rapidly. Two-thirds of the parents reported that the child's attachment problems disappeared within 3 weeks, although a small number of children experienced problems that were ongoing throughout the study. All of these children had parents in the 15-month deployment group. The problems that persisted included the child's having trouble sleeping in his or her own bed, not going to the returning parent for comfort, not wanting the returning parent to leave the house, rejecting the authority of the returning parent, and preferring the non-deployed parent or caregiver over the returning parent. One child, a boy with a deployed mother, experienced severe, persistent attachment problems, thus raising the issue of whether separation from the mother, who is typically the primary attachment figure, played a role in the child's distress. Kelley et al. (2001) addressed this question specifically.

Barker and Berry (2009) discerned three key factors the presence or absence of which had a powerful impact on the stress experienced by children with a deployed parent. At the individual level, being flexible, optimistic, and cooperative can protect a child against stress. At the family level, warmth and cohesion have the same protective effect. Finally, support from the community, such as organizations and groups that bolster and reinforce children's coping skills and provide them with positive role models, helps to buffer against deployment stress (Barker & Berry, 2009). The importance of family and community support underscores the need for programs and services tailored for military families with children.

There was a definite interaction between family stressors and children's behavior. That is, the respondents who reported more family stressors also described more

behavioral and attachment problems in their children (Barker & Berry, 2009). Tzu et al. (2009) observed a parallel pattern in parents of children with ADHD. In the case of deployment, the interplay between parents' and children's distress was highlighted by the observations of an elementary school teacher:

> Children are little barometers—they pick up on however mom or dad is feeling and they bring that to school. They'll carry the anger with them to school. Or sadness if it's chaotic at home, there's a lot more impulsiveness that comes into school. (Richardson et al., 2011, p. 48-49)

With the very young children, there was more evidence of attachment issues such as clinginess, constant need for attention, and asking questions about the absent parent, but there were also displays of hostility and anger, in some cases aimed at the returning parent (Barker & Berry, 2009). Children in this young age group not only are at a crucial stage of development, but they also represent the largest group of children of AD service personnel (DoD, 2010).

Barker and Berry (2009) also observed an association between frequent family moves and increases in children's behavior problems. The researchers pointed out that moving disrupts important relationships for parents and children alike. However, mobility per se is not necessarily detrimental to children (Finkel et al., 2003; Palmer, 2008). Barker and Berry (2009) were especially concerned with moves taking place immediately before or after deployments, which may deprive families of important sources of social support at a critical moment.

Chartrand et al. (2008) also examined the effects of military deployment on the behavior of very young children between the ages of 1.5 and 5 years. All were enrolled in on-base child care centers at a large Marine base with a high rate of deployment. A total of 169 parents participated in the study, which included 55 children with a deployed parent. The instruments included the CBCL, the PSI, and a depression screen. The results revealed that children between the ages of 3 and 5 with a deployed parent exhibited significantly higher internalizing and externalizing behaviors and had higher total CBCL scores according to the non-deployed parent. The age difference in responses supported the idea that children who are too young to comprehend the nature of deployment may be unaffected (or less affected) despite the separation. The findings of Chartrand et al. were broadly consistent with those of Berry and Barker (2009) but differed from other studies of very young children (Card et al., 2011; Kelley et al., 2001).

Flake et al. (2009) examined the impact of deployment on children between the ages of 5 and 12 in a study involving 101 Army spouses (86% women). The instruments utilized included the Pediatric Symptom Checklist (PSC), the Parenting Stress Index-Short Form, and the PSS. Two-thirds of the military partners of the participants had deployed within 6 months of the study and the remaining service members had deployed within the past 15 months. Flake et al. also examined relocation, and close to half the families (47%) had experienced three or more moves within the last 5 years. According to the parents' reports, roughly one-third of the children were classified as at "high risk" for psychosocial problems during the parent's deployment. Flake et al. noted that earlier research using the PSC to assess children with non-deployed parents showed only 18% to

be in the "high risk" category. At the same time, the researchers emphasized that the PSC is a screening instrument and "high risk" does not imply that the children experienced "high levels of psychopathology" (p. 276).

Nonetheless, 39% of the children displayed a high degree of internalizing symptoms including anxiety, frequent worrying, or frequent crying (Flake et al., 2009). Notably, the parents did not report that their children experienced problems with attention or difficulties at school. Flake et al. surmised that a positive school environment might have provided them with support. According to teachers, for some children the school may have served as a "sanctuary" that protected them against the stress and disruption they may have experienced at home during deployment (Chandra et al., 2010b; Richardson et al., 2011).

A sizable proportion of parents (42%) experienced parenting stress that fell in the "clinically significant" range (Flake et al., 2009). However, Flake et al. (2009) noted that in spite of their reported high levels of stress, only 6% could be regarded as at risk for child maltreatment or neglect. Though that percentage may have been small, there is compelling evidence, from a large number of cases, that child neglect and maltreatment does increase during deployment (Gibbs et al., 2007). Flake et al. (2009) proposed that the stress of deployment may have been intensified by the relocations the families experienced, which was similar to the theory proposed by Barker and Berry (2009). Demographically, parents who were younger, married for a shorter duration, and of lower SES were at higher risk for developing psychosocial problems. As in most family

studies, there was an association between the stress experienced by the parents and the children's behavior problems (Flake et al., 2009).

A notable finding was that parents who were employed, who were also likely to be more educated, were significantly less susceptible to parenting stress and reported fewer psychosocial problems in their children (Flake et al., 2009). Employment may be beneficial to the non-deployed parent because it serves as a source of structure and social support. In addition, the income may protect against financial strain, which can be a serious source of stress for military couples experiencing deployment (Allen et al., 2011). It is also possible that the higher educational levels of the employed parents might have worked indirectly to motivate them to seek out more information and resources. Roughly two-thirds (64%) of the parents said they felt supported by the military, and those who made use of the available military and community resources were less likely to have children classified as "high risk" on the PSC.

Lester et al. (2010) explored the impact of deployment on children with a parent in the AD Army or Marine Corps who was either currently deployed at the time of the study or had recently returned home from Iraq or Afghanistan. The participants were 272 children, 163 civilian parents, and 65 recently returned AD parents. In addition to the CBCL, the children were assessed for anxiety and the parents completed the Brief Symptom Inventory (BSI). All of the children were between the ages of 6 and 12.

On the whole, Lester et al. (2010) found the children to be remarkably resilient, displaying emotional and behavioral adjustment consistent with community norms. However, approximately one-third of the children exhibited clinically significant levels

of anxiety according to their own self-reports. Interestingly, the increases in anxiety did not differ significantly between the children whose parents were currently deployed and those whose parents had recently returned home. Supporting the findings of Barker and Berry (2009), the cumulative duration of the parent's deployment was linked with elevated risk for depression in the children as well as externalizing behavior problems.

As Lester et al. (2010) anticipated, psychological distress on the part of the parent, both AD and civilian, was associated with the children's adjustment problems. This association is ubiquitous in the empirical literature. Roughly one-third of the civilian parents and close to 40% of the AD parents displayed elevated levels of anxiety, depression, or global severity scores (Lester et al., 2010). Positive screening for PTSD among the AD parents after returning from combat deployment was similar to prior findings from research on Iraq war veterans. These findings contrast somewhat with those of Allen et al. (2011), in which the civilian wives reported more stress than their AD husbands. While few of the officers experienced signs of PTSD, close to one-quarter (23%) of the enlisted AD parents screened positive for PTSD (Lester et al., 2010). Lester et al. proposed that the officers might have been disinclined to report symptoms of PTSD. The incidence of PTSD among the enlisted parents has serious implications for their own and their family's well-being, because PTSD interferes with parenting abilities (Gewirtz et al., 2010; Khaylis et al., 2011).

To Lester et al. (2010), a particularly striking finding was the high level of anxiety present in some children even after the parent's safe return. According to the researchers, their findings affirmed the importance of understanding the effects of deployment on

family members during all stages of the deployment cycle. Given the extent of multiple deployments, the anxiety of children whose parents returned was probably due to apprehension (not unwarranted) that the parent would be redeployed in the near future. Lester et al. noted that, for the AD parent, the greater the number of deployments and the longer he or she is deployed, the higher the probability of combat stress, changes in parenting styles, emotional estrangement, and even higher levels of fear between family members.

There were some gender differences in the children's reactions to the parent's deployment (Lester et al., 2010). Girls, but not boys, displayed increases in externalizing behavior during the time the parent was deployed, whereas the boys displayed more symptoms after the parent's return (Lester et al., 2010). Chandra et al. (2008, 2010a) investigated the impact of deployment on children in research with families drawn from the 2008 applicant pool of Operation Purple, a summer camp program for military children sponsored by the National Military Family Association. In addition to providing the children with a free summer camp experience, the primary aim of Operation Purple was to help the children develop coping resource for dealing with a parent's deployment in an atmosphere where they had opportunities to interact with peers from military families. The participants for the study were children from 1,507 families. The average age of the children was about 13 years. The sample was primarily white (72%), with female caregivers (95%) who were relatively well-educated and most were employed (58%). In terms of the service branches represented, roughly 57% of the children had a parent in the Army, and close to 20% had a parent in the Air Force. About 37% of the

parents were in the National Guard or Reserve. Virtually all the families (95%) had experienced a deployment and at the onset of the study, 38% of the children had a parent who was deployed.

The comprehensive research project assessed the children and parents on a range of dimensions of psychosocial and family functioning (Chandra et al., 2010a). The overall finding was that the children experienced a greater degree of emotional problems than was typical for children in the general population, based on their own and their caregivers' reports. Consistent with the findings of Lester et al. (2010), the longer the parent had been away over the last three years, the greater the difficulties the children experienced during the parent's deployment and return home (Chandra et al., 2010a). Interestingly, the RAND investigators had expected the children to experience less difficulty after more months of deployment on the premise that the family would have adapted. However, no studies supported that assumption. Rather the few studies that have examined the duration and frequency of the parent's deployments confirm that the impact on children is cumulative.

In contrast to the findings of Lester et al. (2010), the RAND researchers found that girls were especially prone to difficulties during the reintegration stage (Chandra et al., 2010a). Additionally, adolescents as well as children in middle childhood experienced problems during deployment and reintegration, which contradicted the conclusion of Card et al. (2011) that adolescents were relatively unaffected. One finding reported by Chandra et al. (2010a) that was consistent across studies was that there was a

strong association between the psychological health of the caregivers and the children's psychosocial problems.

In view of the problems they observed in older children and adolescents, Chandra et al. (2011) focused on Operation Purple children and youth from 11 to 14 years old. The findings confirmed unduly high levels of psychosocial distress compared to age peers from general population samples. About one-third of the youth (34%) displayed high levels of emotional or behavioral problems, according to caregiver reports, versus 19% for youth the same age in the general population. Similarly, 30% of the youth experienced signs of anxiety, a figure double the number for their peers in the general population. The participants' peer relationships were comparable to those of other youth and improved slightly at the 6-month and 12-month assessments. Academic engagement was also comparable to other youth, and actually improved significantly from the 6-month to 12-month assessment.

Certain age and gender differences emerged. Specifically, the older adolescents experienced more academic difficulties while the younger participants were more vulnerable to anxiety (Chandra et al., 2011). Girls were also more prone to anxiety. The study also confirmed the association between children's and caregivers' well-being. One finding, which may have been a reflection of the older age of the children, was that the youth who reported more family communication problems experienced more psychosocial difficulties.

Military Deployed Mothers

There is very limited research focusing on children's responses to deployed mothers. Kelley et al. (2001) explored problem behaviors in children whose mothers were deployed Navy enlisted personnel. The research was conducted from 1996 to 1998. The sample consisted of 52 Navy women facing deployment and 75 non-deploying Navy mothers who served as a control group. Roughly half the women were married and 5% lived with a partner. The CBCL was used to assess the children's behavior and CBCL scores from 32 children with employed civilian mothers were used for comparison purposes. Kelley et al. conducted their research from the perspective that mothers are usually the child's primary attachment figure, which may influence young children's adjustment to separation. The children's mean age was 3.1 years.

Compared to the children from civilian families, the children with Navy mothers scored slightly higher on externalizing behaviors but were no different in internalizing behaviors (Kelley et al., 2001). However, the children whose mothers were deployed had a greater probability of scoring in the clinical range than either the civilian children or the children with non-deployed Navy mothers. According to both the Navy mothers and the child's caregiver while the mothers were away, the children whose mothers deployed displayed more internalizing behaviors than the children whose mothers were assigned to shore duty during the same time. With respect to externalizing behaviors, however, only the caregivers (but not either group of Navy mothers) reported higher levels of externalizing among the children whose mothers deployed. One possibility was that the

caregivers might have been less tolerant of externalizing behaviors, although that is speculative.

Kelley et al. (2001) concluded that their findings partly supported their premise, based on attachment theory, that a mother's deployment would have behavioral effects on young children. More children whose mothers were deployed displayed clinical levels of anxiety, anger, withdrawal, and noncompliance, although the number of children in that group was fairly small. Overall, most of the children adapted well to their mother's absence, which was consistent with the finding of Card et al. (2011) that deployment has minimal effects on very young children. However, Paris et al. (2010) considered very young children especially vulnerable to developmental problems as a result of a parent's deployment. They advocated home-based, family-oriented interventions for military families with infants, toddlers, and preschool children for primary prevention and intervention.

School Staff Perception of Military Families

In a focus group study, teachers, school counselors, and administrators clearly articulated the academic and behavioral effects they observed in their students as a result of the parent's deployment (Richardson et al., 2011). The school personnel were from 12 schools, 6 at one military installation and 6 serving military installations in different parts of the country. The focus group participants felt that many children were able to cope effectively with the challenges presented by deployment but others were experiencing serious difficulties. As sources of the challenges the children experienced, the school staff cited uncertainty over the duration of deployment, increased stress at home, and

psychological stress experienced by the non-deployed parent (Chandra et al., 2010b). The participants felt that these issues contributed to academic difficulties in the students.

A common perception was that children whose parents were in the Select Reserve were burdened with additional challenges because they lacked the support networks of the children of AD personnel (Chandra et al., 2010b). Indeed, Select Reserve members may be more susceptible to stress from combat deployment, which in turn presents more challenges for their families (Gewirtz et al., 2010; Khaylis et al., 2011). The school staff reported observing a range of emotions in the children of both AD and Select Reserve members, noting that anger and aggression were more common in boys and depression and somatic complaints were more common in girls (Chandra et al., 2010b). In some cases, the children's intense emotions disrupted their classroom activities and their social relationships with peers.

The RAND researchers felt that the perception of many children that the school was a refuge or "safe haven" from instability at home and the association between the children and their caregivers' psychosocial health present two channels for targeting interventions for children experiencing parental deployment (Chandra et al., 2010; Richardson et al., 2011). Connections between home and school are healthy for children in general and can be especially valuable for children who experience family stress due to deployment. A particular obstacle to helping the children, according to the researchers, was an inadequate number of providers trained in child and adolescent health working with Tricare. Similarly, the APA Task Force (2007) noted that the military had an urgent need for more behavioral health professionals.

Opposing Views

Although there has been an increase in the prevalence of ADHD among children in recent years, some are skeptical of the diagnosis. The fact that symptom reports often differ between parents and teachers is one reason for this skepticism (Derks et al., 2007; Faraone et al., 2005; Mares et al., & Saini, 2007). Carpenter-Song (2009) noted an increasing trend to normalize children's behavior, creating a single standard against which children are now judged, rather than embracing a diversity of personality and behavioral traits. This, it has been argued, could lead to a tendency to over diagnose behavioral disorders like ADHD, treating as medical problems what could or should be treated as a moral issue (Carpenter-Song, 2009). Relatedly, some scholars have noted that pharmaceutical companies have greatly profited from the increased diagnosis of ADHD and other psychological disorders, which can be treated with psychotropic drugs (Batstra, Hadders-Algra, Nieweg, Van Tol, Pijl, & Frances, 2012; Connor, 2011). As a result, these authors have argued, drug companies may contribute to over diagnosis of ADHD by promoting or incentivizing the diagnosis for profit-seeking reasons (Batstra et al., 2012).

Data from the United States indicate that as many as 86% of children diagnosed with ADHD have only mild or moderate forms of the disorder (Jackson, 2013). Thomas, Mitchell, and Batstra (2013) argued that, although large numbers of children may meet the DSM diagnostic criteria for ADHD, there is no concrete evidence to suggest that medically treating ADHD improves quality of life in patients. Although parents and teachers have reported reduction of symptoms in clinical trials of ADHD medication

(Faraone et al., 2005), quality of life is often not measured in such trials. Thomas et al. (2013) also suggested that gender differences, such as those reported by Pastor and Reuben (2008), may play a role in how hyperactivity symptoms are perceived and diagnosed.

In one important study, Bruchmüller, Margraf, and Schneider (2012) sent four case vignettes in boy and girl versions to 1,000 child psychologists, psychiatrists, and social workers in order to determine whether practitioners adhere to DSM diagnostic criteria, and whether a gender bias results in over diagnosis among boys. Only one of the four vignettes fit the DSM criteria; the others displayed some of the criteria, but not enough to result in a diagnosis of ADHD. The participants diagnosed the boy vignettes twice as often as they did the girl vignettes, and 16.7% of therapists diagnosed ADHD in the non-ADHD vignettes. Based on this evidence, the researchers concluded that ADHD is over diagnosed and that therapists do not adhere to diagnostic criteria. This result strongly suggested a need for greater diagnostic rigor.

As with ADHD, some are skeptical about the impact of military deployment on children's development. In particular, a meta-analysis conducted by Card et al. (2011) produced the conclusion that deployment had little effect on psychosocial adjustment among children of military families. Although the researchers did not conclude that deployment could have detrimental effects, their findings emphasized the lack of evidence robust enough to make broad general conclusions. Children of deployed families with a biological predisposition to ADHD represent a uniquely vulnerable population.

Regarding the impact of parental deployment on children, the existing literature could be said to be one-sided in that the majority of studies have examined only potential areas of negative impact, such as stress and academic performance. Additionally, when correlations between negative outcomes and parental deployment have been found, they typically have been associated with complicating factors such as family dysfunction, poor coping mechanisms, or corporal punishment (e.g., Loo, 2011). One study to examine the impact of positive variables was conducted by Geddes (2013), who explored child adaptability, valuing behavior, and family cohesion in a study of 143 parents of children with deployed parents. Unsurprisingly, Geddes found that these positive, protective factors tended to correlate with more positive outcomes and behaviors among the children, as reported by parents. Such findings call into question the role of deployment per se, echoing the concern raised by Card et al. (2011) that factors other than deployment may account for variation in outcomes among military children. More research is needed to determine the causal relationships, as opposed to simple correlations, among parental deployment and outcomes. Hypothesized results of the current study were that there would be a statistically significant relationship between military deployment status and symptoms of ADHD in military children aged 3 to15, and that the covariates ethnicity, family structure, and parents' age would affect the frequency of ADHD symptoms.

Conclusion

The U.S. military, in the years leading up to and including the years of the current study, has been operating under the stress of unprecedented deployments at a time when

the AD service force also included an unprecedented number of children. On the whole, military families are quite resilient and have the ability to cope with the unique challenges they face. On the other hand, there is compelling evidence that the sheer number of deployments and time spent away from home is straining the coping resources of caregivers and children alike (Chandra et al., 2010b; Barker & Berry, 2009; Lester et al.,. 2010; Richardson et al., 2011). While many children and adolescents are able to cope effectively, many others experience psychosocial problems including behavior problems, anxiety, depression, and academic difficulties.

According to records from Tricare, children with ADHD represent the largest segment of children whose families have sought consultation or treatment for behavioral or emotional problems (Gorman et al., 2010). ADHD has both biogenetic and environmental influences, and family stress contributes to the manifestation of ADHD in vulnerable children (Lange et al., 2005). One can infer that the documented stress many children and families experience due to deployment could activate or exacerbate symptoms of ADHD in children with a genetic predisposition. However, to date there is actually limited research on the effects of deployment on children and none that specifically examines a potential relationship between deployment and children's ADHD. The present study addressed this gap according to the method detailed in Chapter 3. There is, however, universal endorsement for more research into the effects of deployment on children and families and for more programs and services tailored to the needs of military families.

Chapter 3: Research Method

Overview

In this study, I examined the possible relationships between parental separation due to military deployment and ADHD symptoms exhibited in children aged 3 to 15 and who are in military families in the Southwestern region of California during the years 2001 to 2010. The aim of this study was to illuminate the individual and family characteristics associated with vulnerability or resilience to ADHD for the purpose of informing the design of services, programs, and interventions for military families with a child or children who report experiencing symptoms of ADHD or at risk for ADHD diagnosis. The predictor variable was parental separation due to military deployment status (families who have service members whose occupations require military deployment of greater than 6 months, military deployment of less than 6 months, or no military deployment). The covariates were ethnicity, family structure, and parents' age. The criterion variable was the child's exhibited symptoms of ADHD (ADHD, non-ADHD). In this chapter, I describe the research method in detail in the following sections: research design, appropriateness of the research, research questions and hypotheses, population and sample, instrumentation, validity and reliability, data collection, data analysis, and ethical procedures. A summary concludes the chapter.

Research Design

The most appropriate research design for this study was a quantitative correlational research design. I also investigated the relationship between the predictor variable of parental separation due to military deployment and the dependent variable of

ADHD symptoms exhibited and reported by parents of children in military families while considering some parental characteristics of those families. Specifically, in this correlational study, I examined whether a relationship existed between the predictor variable of military deployment status and the criterion/dependent variable of whether children aged 3 to 15 were exhibiting or report experiencing symptoms of ADHD at any point from 2001 to 2010 considering the following covariates: ethnicity, family structure, and parents' ages. A correlational research design is appropriate for the exploration of the relationships between a set of variables (Creswell, 2014; Salkind, 2006). A correlational research design was chosen for this study because this particular design allows an assessment of a relationship between variables (Burns & Grove, 2005). If the study were to reveal a relationship among the variables, the results of the study could lead to a better understanding of how military deployment status is related to ADHD symptoms exhibited by children aged 3 to 15 considering ethnicity, family structure, and parents' age.

I did not seek to ascertain causality between the variables in question but rather to explore whether a relationship existed. Focusing on correlational relationships enabled me to avoid the necessity of manipulating variables such as would be required to demonstrate causality. Chi-square was used to determine the relationship between parent military deployment and appearance of a child's ADHD symptoms. Multinomial hierarchical logistic regression analysis was the statistical tool used to determine whether relationships existed among the independent and dependent variables. Hierarchical logistic regression analysis was used to examine the extent to which changes in the

predictor variable were correlated with changes in the dependent variable when considering covariates.

The approach used for this research design involved a convenience sample of military families obtained through the community surrounding the bases. The participants were surveyed using a demographic questionnaire and the VADPRS for parents (Wolraich et al., 1998) that gathered all required data for this study. The data collection was quantitative in nature to reflect the chosen research design.

Appropriateness of the Research Design

The structure of the variables and their specification should dictate the choice of study design (Creswell, 2014). Quantitative correlational research designs are used to provide information about the relationships among variables, as opposed to experimental designs in which the effects of an intervention are studied. In correlational studies, the relationship between two or more variables is measured using correlational statistical tests (Creswell, 2014). Explanation of the relationship between variables leads to the description of trends. The criterion variable for this study, as noted above, was quantitative and dichotomous in nature. When dealing with ADHD symptoms in a correlation study, Morley (2010) used the same methodology, and Creswell (2014) also indicated that it is the most appropriate for specifying a hierarchical logistic regression, which was used to assess the relationships with the predictor variable with respect to the criterion variable of ADHD symptoms considering the covariates.

Research Question and Hypotheses

The following research questions and hypotheses guided the current study:

$H_0$1*:* There is no statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

H_a1*:* There is a statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

Research Question 2: What is the relationship between military deployment and symptoms of ADHD in children considering covariates?

$H_0$2*:* There is no statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered (ethnicity, family structure, parents' age).

H_a2*:* There is a statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered: ethnicity, family structure, and parents' age.

Population and Sample

The research population was United States Armed Services family members who lived in military communities in the Southwest region of California. The participants were the military parents (over 18) of children who had and had not exhibited and/or reported experiencing symptoms associated with ADHD. Upon approval, I advertised the research study through local media and accessed the participants through the Internet via e-mail, research website, and local communities that surround military bases, distributing mass e-mails and flyers from 4 to 8 pm daily for 2 weeks on the site. Participants informed me of their willingness to participate in the study by e-mail in response to media advertisement or in person during survey distribution hours. My contact

information was posted in the flyers distributed in communities of the military base sites. It was expected that there would be more families with children not presenting with ADHD symptoms than presenting with ADHD symptoms. A power analysis using G*power 3.1.8 (Faul, Erdfelder, Buchner, & Lang, 2009) was conducted to determine the minimum required sample size. Using an $p(X = 1, Y = 1)$ 0.5, power of 0.8, alpha or level of significance value of 0.05, and an odds ratio of 1.5, the total sample size estimated through G*Power was a minimum of 163 sample of families. Thus, I expected to recruit at least 163 participants.

Methodology

In this study, I used a demographic questionnaire and the Vanderbilt ADHD diagnostic patient rating scale for parents (VADPRS) to measure the study variables related to the ADHD symptoms of children the families to which I had access. Participants were asked to complete a questionnaire providing family structure, demographics, the presence of ADHD symptoms, military status, period of separation from parent within a year, and frequency of deployment. Additionally, a different questionnaire was used to determine the symptoms of ADHD diagnosis of the children.

Demographic Information Sheet

The demographic information sheet was a survey questionnaire created to collect demographic information of the participants (see Appendix A). The demographic questions were used to obtain the predictor variable military deployment status (military deployment > 6 months, deployment < 6 months, or no military deployment.); covariates of family structure (dual parent [female-male], dual parent [male-male], dual parent

[female-female], male single parent, female single parent, grandparent, other family members, and nonromantically involved friend), parents' ages, and ethnicity.

Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS)

The VADPRS has four subscales on behavior problems at school of inattention, hyperactivity/impulsivity, oppositional defiant/conduct disorder, and anxiety/depression (Wolraich et al., 1998). The VADPRS also includes a comparable subscale to assess parents' perceptions of youth school and social functioning (Collett, Ohan, & Myers, 2003). In addition, there are items that measure school functioning of children in terms of the two subscales of academic performance and behavioral performance. In addition to subscale scores, a symptom count score can be derived for DSM-IV items to access ADHD status with symptoms rated as occurring *often* or *very often* scored as 2 and 3. The child must score a 2 or 3 on 6 out of 9 items on Questions 10 to 18 and score a 4 or 5 on any of the Performance questions (Questions 48 to 55). This score determined whether the children were exhibiting symptoms consistent with DSM IV for ADHD, Predominantly Hyperactive/Impulsive Type, or not. The variable was coded using a dichotomous scale where 1 = *ADHD symptoms* and 0 = *no presentation of ADHD symptoms*.

Validity and Reliability

Due to the purpose of this study, the relatively small nature of the data collection, and since no identical study has been located, an existing survey instrument was used to collect the data to determine the ADHD status of the children. The VADPRS survey has been found to have a good to excellent internal consistency with a Cronbach's alpha

measure of .93 (Wolraich et al., 2004). Becker, Langberg, Vaughn, and Epstein (2012) investigated the reliability, factor structure, and concurrent validity of the VADPRS and found that the internal consistency and factor structure of the VADPRS are acceptable and consistent with other accepted measures of ADHD.

The concurrent validity of the VADPRS was tested by Wolraich et al. (2004) through the examination of the correlation of VADPRS with an established instrument, the Computerized Diagnostic Interview Schedule for Children (C-DISC-IV, Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) which also determines the ADHD status of the respondents. Results showed that the concurrent validity of the item total of the VADPRS is high (r = .79), which showed that it measures the same as the C-DISC-IV.

Data Collection

I conducted the data collection for this study. First, I identified public, community areas in eligible military communities to post advertisement flyers and conduct the study. Second, I visited each site to distribute the surveys and questionnaires on the grounds and in stores in the surrounding communities. The flyers contained an introduction and the details of the study and the period of time the study would be conducted. Volunteer participants were sought through advertisements for the study and usage of public, community parks in military communities, where parents of children aged 3 to 15 were known to congregate. Third, I accepted all volunteer participants who met the inclusion criteria of being over the age of 18, being affiliated with the military, living in military communities in the southwest region of California, and parenting children between the ages of 3 and 15.

Prior to providing any personal information, participants were briefed on their rights, including the right not to complete the survey if they felt uncomfortable. Once expression of interest was received from a volunteer participant, participants were provided informed consent and were notified about the confidentiality of the study prior to completing the questionnaire. Follow-up or collection of signed consent forms from potential participants was conducted afterward.

Consent forms were included in the survey link information via e-mail or in handout, paper format with instructions to the volunteer participants who passed the inclusion criteria. The survey link was an online survey tool called Survey Monkey. The VADPRS and demographic sheet was posted in the Survey Monkey link. The identity of the participants was not asked in any questions in the survey link. I did not follow up with those volunteer participants but continued recruiting volunteers in order to achieve the targeted number of responses based on the sample size requirements. The respondents remained anonymous throughout the process.

The recruitment process took place via flyer distribution and posting, but data collection of survey responses took place online. By employing the flyers, I was able to reach the suitable number of participants, continuously recruiting participants until the required sample size was achieved. This approach also avoided intruding in participants' safe space, while employing Survey Monkey maintained anonymity of the participants. The flyer also included my contact information and the web address at which the surveys could be completed via Survey Monkey.

Once the sample size requirement was achieved, a summary of the responses through Survey Monkey was downloaded in the website. Participants were not contacted following the study. My contact information was provided in the event participants had any questions. To protect the anonymity of participants, I at no time asked them to disclose their names. One of the features of the Survey Monkey website is that the web link is secured, encrypted with a Secure Socket Layer, and set not to track participants' IP addresses. Data were analyzed using the Statistical Package for the Social Sciences 22.

Data Analysis

Data cleaning and screening procedures included ensuring that each participant's responses to all instruments were checked for missing values. Any respondents with the majority of responses being missing were eliminated from the analysis. As Survey Monkey does not allow out-of-range responses, it was not necessary to check for these. To ensure all participants met the inclusion criteria (over the age of 18, affiliated with the military, living in military communities in the southwest region of California, parenting children 3-15), descriptive statistics were run on the demographic survey responses. Participants who did not meet the criteria were eliminated from the analysis.

There were two forms of data analysis conducted on the data gathered from the military families. The first form of data analysis was a descriptive analysis of all of the variables of the study. The second form was inferential utilizing the chi-square test of independence for Research Question 1 and hierarchical logistic regression for Research Question 2. Prior to describing the analyses, I provide the following operationalization of the variables:

1. ADHD symptom presence: this criterion variable was a dichotomous variable for ADHD, non-ADHD.
2. Military deployment status: this independent variable was a categorical variable with three options: military deployment of greater than 6 months, military deployment of less than 6 months, or no military deployment.
3. Family structure: this covariate was a categorical variable with seven possible options: dual parent (female-male), dual parent (male-male), dual parent (female-female), male single parent, female single parent, grandparent, other family members, and nonromantically involved friend.
4. Ethnicity: this covariate was categorical and included options for Caucasian, African American, non-White Hispanic, Asian, and American Indian.
5. Parents' age: this covariate was continuous and was an average of the age of the parents in the household.

Prior to conducting the chi-square and hierarchical logistic regression analyses, I calculated descriptive statistics for each of the above variables. A calculation to determine the ratio of symptoms of ADHD in families to no symptoms of ADHD in the families was conducted to validate the approximation made prior to the study of about three families with no ADHD symptoms present for every one family where ADHD symptoms are present.

Following the descriptive analysis, the data were analyzed using chi-square and hierarchical logistic regression. Normality testing and test of homogeneity of variances were not conducted since the chi-square and hierarchical logistic regression are non-

parametric tests, which do not require the data to be normally distributed or equal in variance (Creswell, 2014).

Chi-square test of independence was used for the analysis to answer research question 1. Chi-square is used to test for a relationship or dependence between two categorical variables. Chi-square is used when both variables are categorical. The dependent variable (child exhibits symptoms of ADHD) and the predictor variable military deployment status (military deployment of greater than six months, military deployment of less than six months, or no military deployment) were categorical.

Hierarchical logistic regression was utilized to answer research question 2 because the criterion variable represents two outcomes or dichotomous and covariates. The two outcomes for the criterion variable were (a) a child reported and/or exhibits symptoms of ADHD and (b) a child did not report or exhibit symptoms of ADHD.

Hierarchical logistic regression was used to determine the significance or the influence of military deployment status on the criterion variable of the child's ADHD symptoms when considering the covariates of family structure, parents' age, and ethnicity. The hierarchical logistic regression model was as follows:

$$ln\,[p(\text{Child's ADHD symptoms})/p(1 - \text{Child's ADHD Symptoms})] = B_0 + B_1{*}x_{\text{military deployment status}} + B_2{*}xf_{\text{amily structure}} + B_3{*}x_{\text{ethnicity}} + B_4{*}x_{\text{parent's age}}$$

The hypotheses would not be rejected if all the *p*-values of the parameter estimates for the predictor variable and the covariates had a probability greater than the level of significance of 0.05, implying no statistically significant relationship with the dependent variable of child's ADHD symptoms. If the predictor variable, as noted in the above

hypotheses, were statistically significant at the 0.05 level of significance, then the null hypothesis would be rejected (Tonidandel & LeBreton, 2011).

Ethical Procedures

A number of legal and ethical issues were important to take into consideration when conducting this study. These issues included the voluntary nature of participation, the consent provided by participants, confidentiality provided to participants, the knowledge of the participants' rights to withdraw from the study, the acknowledgement of risks associated with the study, and the expected benefits of the study. When conducting human research, the researcher must take care to protect the physical and emotional factors of the participants during the study (Creswell, 2014; Trochim & Donnelly, 2007). As a result, this study ensured the participants' safety. For example, I sought and received approval from the Walden University Institutional Review Board (IRB) prior to recruiting participants or collecting data (12-01-14-0120337).

I have kept all data anonymous through secure record keeping practices such as password protection and locked storage cabinets. Steps have been taken such that no linkage between the person and the data can be made. No record of participants' personal identifiable information has been kept at any time. Responses to the questionnaire and survey did not include providing personal identifiable information.

My role in the data collection and analysis was to obtain the data from the participants via survey distribution and online surveys. I was affiliated with the military bases that were used but I was not in a position of authority.

Summary

Chapter 3 contained an explanation of the methodology used in this study to assess the hypotheses and answer the research questions. The current quantitative correlation study examined the relationship between military family characteristics and the probability of a child in the household presenting with symptoms of ADHD. The hierarchical logistic regression model was the most appropriate analytic method to investigate whether specified variables are correlated with the probability of a child having symptoms of ADHD when considering covariates. This chapter also contained a discussion of the source of the data, research questions, hypotheses, data collection, validity and reliability, and information on data analysis for the study.

Chapter 4: Results

Introduction

The purpose of this quantitative survey study was to examine the relationships between parental separation due to military deployment status and ADHD symptoms in children aged 3 to 15 in the southwestern region of California during the years 2001 to 2013. The aim of this study was to examine the individual and family characteristics associated with vulnerability or resilience to ADHD in order to inform the design of services, programs, and interventions for military families who report having a child who is experiencing symptoms of ADHD or who is at risk for ADHD diagnosis. The predictor variable was parental separation due to military deployment status. The covariates were ethnicity, family structure, and parents' age. The criterion variable was the child's exhibited symptoms of ADHD. To that end, the study was guided by the following research questions and associated null and alternative hypotheses:

Research Question 1: What is the relationship between military deployment status and ADHD symptoms?

$H_0$1: There is no statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

H_a1: There is a statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

Research Question 2: What is the relationship between military deployment and symptoms of ADHD in children considering covariates?

$H_0$2: There is no statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when covariates are considered (ethnicity, family structure, parents' age).

H_a2: There is a statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when covariates are considered (ethnicity, family structure, parents' age).

In this chapter, I present the results of the study. First, data collection and descriptive statistics are provided, including response rates and demographic characteristics of the sample. Next, results of the survey are reported as they relate to each of the research questions. A summary concludes the chapter.

Data Collection and Descriptive Statistics

After IRB approval on December 1, 2014, flyers were distributed and posted in the Southern California region and made available electronically. Data collection was prolonged due to unexpected rainstorms. Data were collected using a researcher-designed demographic questionnaire and the VADPRS for parents (Wolraich et al., 1998). The study began December 1, 2014 and ended December 23, 2014. Participants were encouraged to share the survey link with other persons within military communities and advised on the military base regulations involving independent studies. There were no missing values for the questions on the VADPRS, so no data were excluded on that basis. The data cleaning process involved screening collected data to ensure all inclusion criteria were met. The final sample size was 164.

Data Cleaning

The criteria for inclusion in the study were (a) aged over 18, (b) affiliated with the military, (c) living in military communities in Southwest California, and (d) parenting children aged 3 to 15. All 164 participants were deemed to meet all inclusion criteria, so no data were excluded from analysis. Descriptive statistics related to the inclusion criteria are presented in Table 1.

Table 1

Descriptive Statistics for Inclusion Criteria (N = 164)

Variable	*N*	%
Age		
18 – 24	13	7.9
25 – 34	31	18.9
35 – 44	82	50.0
45 – 54	37	22.6
Missing	1	0.6
Military status		
Active duty	96	58.5
Reserve	21	12.8
Military spouse or parent of military child	45	27.4
Missing	2	1.2
Ages of children		
3 – 5	27	16.5
6 – 10	50	30.5
11 – 15	83	50.6
Missing	4	2.4

All participants were deemed to be over age 18. Although one participant did not provide her age, she indicated that she had children in the 7 to 9 age range. Therefore, I assumed that her age was over 18 and her data were included in the analysis. Two respondents did not respond to the survey question regarding military status. However,

prior to administering the survey, I had already verified that all participants were affiliated with the military, so these two respondents were included in the analysis. All participants were accessed within military communities in Southwest California, so all were deemed to meet the third inclusion criterion. Four participants did not report the ages of their children but indicated that they had children. Because the questions on the VADPRS apply to children aged 3 to 15, and because I verified that participants had children aged 3 to 15 as part of the initial contact, these four participants were deemed to have eligible children and were included in the analysis. I also verified that one survey was submitted for a qualifying child within a family.

Demographics of the Sample

The demographic questionnaire gathered information related to individual demographics (age, gender, and ethnicity), family demographics (number of children, ages of children, family structure, and children with diagnoses), military demographics (military status, deployment history within the last 48 months, frequency of travel per year, and reasons for travel), and ADHD demographics.

Individual Demographics

Descriptive statistics related to individual demographic characteristics are summarized in Table 2. The majority of participants (72.6%) were aged 35 or older, and 18.9% were between 25 and 34. Only 7.9% of participants were aged 18 to 24. Most participants (57.9%) were male. Caucasian was the most frequently reported ethnicity (31.7%). Other participants were African American (20.7%) and Hispanic (16.5%). Only eight participants (4.9%) reported Asian or Native American ethnicity; the groups were

combined due to the small number. A large number (n = 43, 26.2%) of respondents did not indicate their ethnicity. Therefore, care was taken to interpret the results of analysis when ethnicity was included. This was done by combining the two ethnic groups reported Asian or Native American, to decrease possibly identifying participants.

Table 2

Descriptive Statistics for Personal Demographics (N = 164)

Variable	*N*	%
Age		
18 – 24	13	7.9
25 – 34	31	18.9
35 – 44	82	50.0
45 – 54	37	22.6
Missing	1	0.6
Gender		
Female	68	41.5
Male	95	57.9
Missing	1	0.6
Ethnicity		
Asian/Native American	8	4.9
African American	34	20.7
Hispanic	27	16.5
Caucasian	52	31.7
Missing	43	26.2

Family Demographics

Descriptive statistics related to family demographic characteristics are summarized in Table 3. The majority (89.0%) of participants had between one and three children; the remaining 11% reported having between four and six children. Most had children between ages of 11 and 15 years old (50.6%), followed by those with children

between 6 and 10 (30.5%). Children aged between 0 and 5 years were the least commonly reported (16.5%). A large majority of participants (89.0%) reported single-parent family structures, with only 10.4% reporting dual-parent households. When asked to report whether they had children in the home diagnosed with emotional disorders, academic performance struggles, or social challenges, a majority (64.0%), reported diagnoses of academic performance struggles. By contrast, emotional disorders (28.7%) and social challenges (29.9%) were less commonly reported.

Table 3

Descriptive Statistics for Family Demographics (N = 164)

Variable	*N*	%
Number of children		
1 – 3	146	89.0
4 – 6	18	11.0
Ages of children		
0 – 5 years	27	16.5
6 – 10 years	50	30.5
11 – 15 years	83	50.6
Missing	4	2.4
Family structure		
Dual parent	17	10.4
Single parent	146	89.0
Missing	1	0.6
Children in home diagnosed with[a]		
Emotional disorders	47	28.7
Academic performance struggles	105	64.0
Social challenges	49	29.9

Note. [a]Parents were asked to mark all that apply.

Military Demographics

Descriptive statistics related to military demographic characteristics are summarized in Table 4. The majority of participants were AD members of the military (58.6%), but 27.4% were spouses or parents of military members. Twenty-one (12.8%) respondents reported reserve military status. Within the 48 months prior to data collection, 76.2% of participants had been deployed, and 23.2% had not. Of those who had been deployed, 40.2% reported deployments lasting 0 to 6 months, and 36.0% reported deployments lasting 7 to 12 months. Almost all participants (98.2%) reported traveling at least once per year, with most (62.8) traveling only once per year. Thirty participants (18.3%) reported traveling four times per year, but only two (1.2%) reported traveling twice per year. Three participants did not respond to the question about frequency of travel, which could indicate that they do not travel at least once per year or that they travel more than four times per year, but this cannot be confirmed from the data. Just over half of participants (54.3%) indicated that the major reason for their travel was military deployment, whereas 45.7% indicated that they most travel for nondeployment-related reasons.

Table 4

Descriptive Statistics for Military Demographics (N = 164)

Variable	*N*	%
Military status		
Active duty	96	58.6
Reserve	21	12.8
Military spouse/parent of military child	45	27.4
Missing[a]	2	1.2
Deployment history in last 48 months		
0 – 6 months	66	40.2
7 – 12 months	59	36.0
None	38	23.2
Missing	1	0.6
Frequency of travel/year		
Once	103	62.8
Twice	26	15.9
Thrice	2	1.2
Four	30	18.3
Missing	3	1.8
Reasons for travel		
Deployment	89	54.3
Non-deployment	75	45.7

Note. [a]Respondents did not answer questions regarding their military status on the survey. However, the researcher verified that all respondents were affiliated with the military.

ADHD Demographics

Descriptive statistics related to ADHD-related demographic characteristics are summarized in Table 5. Participants were asked whether their children exhibit symptoms of ADHD. More than half (57.9%) reported that they had children with ADHD symptoms; 42.1% reported that they did not. Since results indicated about an equal

Table 5

Descriptive Statistics for ADHD Symptoms (N = 164)

Symptoms	*N*	%
Yes	95	57.9
No	69	42.1

number of families with children with ADHD symptoms and families without children with ADHD symptoms, the ratio of nonsymptom families to symptom families is approximately be 7:8.5.

Results

Research Question 1

To answer the first research question, a chi-square test of independence was used to test for relationship or dependence between the two categorical variables of deployment status and ADHD symptoms. The dependent variable was "child exhibits ADHD symptoms," a dichotomous variable with possible values of "yes" or "no." The predictor variable was "military deployment status in the last 48 months," a categorical variable with three possible values: "military deployment of six months or less," "military deployment of more than six months," or "no military deployment." The results are summarized in Table 6.

The results of the chi-square test of independence were not significant ($p = .54$). Therefore, the null hypothesis (there is no statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010) is retained.

Table 6

Chi-Square Results for Presence of ADHD Symptoms by Deployment

Deployment	ADHD symptoms			
	Yes		No	
	n	*%*[a]	*n*	*%*[b]
1 – 6 months	39	59.1	27	40.9
7 – 12 months	36	61.0	23	39.0
None	19	50.0	19	50.0

Note. χ^2 (2, 164) = 1.24, $p = .54$

[a]Percents represent percent with children who have ADHD symptoms for each deployment level

[b]Percents represent percent with children who do not have ADHD symptoms for each deployment level

Research Question 2

To answer the second research question, hierarchical logistic regression was used because the dependent variable (symptoms of ADHD) is dichotomous and because it was the intent of the research to consider covariates (family structure, ethnicity, and parents' age). The predictor variable was military deployment status. The covariates were added into the model first (Step 1) and deployment was entered into the model second (Step 2) to determine whether the Nagelkerke R^2 and classification increased with the addition of deployment. Since there were 47 respondents who preferred not to give their ethnicity, two logistic regressions were performed: one without ethnicity (full sample) and one with ethnicity (reduced sample).

Full-sample regression (without ethnicity). The results of the full-sample regression without ethnicity are summarized in Table 7.

Table 7

Hierarchical Logistic Regression Analysis for Variables Predicting ADHD Symptoms (n = 161[a])

Variable	*B*	*Wald*	*df*	*p*
Step 1	χ^2 (2, 161) = 16.27, *p* = <0.000			
Age	.75**	12.64	1	<.001
Family	-.67	1.56	1	.212
Step 2	χ^2 (3, 161) = 16.85, *p* = 0.001			
Age	.74**	12.46	1	<.001
Family	-.63	1.35	1	.245
Deployment	.17	0.59	1	.443

Note.[a]The reduced *n* is due to respondents who did not answer the questions for age, military status, or deployment history
Nagelkerke R^2 = .129 and classification = 68.3% for Step 1; Nagelkerke R^2 = 0.134 and classification = 66.5% for Step 2. ** $p < 0.01$.

These results indicate that parental age significantly predicts the reported presence of ADHD symptoms in children. The positive coefficient ($B = 0.75$) indicates that, as parental age increases, the ADHD symptoms in children also increase. Therefore, older parents were more likely to report having children with ADHD symptoms. A regression analysis was calculated to show in detail the relationship of parental age to ADHD symptoms (Table 8). Less than 60% of the two younger parental age levels (18 to 24, 15%; 25 to 34, 39%) had children who exhibited ADHD symptoms. For the older parental age levels, more than 60% had children who exhibited ADHD symptoms (35 to 44, 68%; 45 to 54, 65%). Family structure and deployment status were not significant; neither contributed to the prediction of ADHD symptoms in children.

Table 8
Hierarchical Logistic Regression Analysis for Variables Predicting ADHD Symptoms (n = 117)

Variable	*B*	*Wald*	*df*	*p*
Step 1	χ^2 (6, 117) = 19.66, *p* = .003			
Age	0.60*	6.48	1	.011
Family	-0.61	0.85	1	.356
Ethnicity[a]		7.77	4	.100
Ethnicity (1)[b]	21.59	0.000	1	1.000
Ethnicity (2)[b]	2.32*	4.16	1	.041
Ethnicity (3)[b]	0.18	0.13	1	.717
Ethnicity (4)[b]	1.09*	4.30	1	.038
Step 2	χ^2 (7, 117) = 21.76, *p* = .003			
Age	0.59*	6.21	1	.013
Family	-0.54	0.66	1	.417
Ethnicity[a]		7.40	4	.116
Ethnicity (1)[b]	21.72	0.00	1	1.000
Ethnicity (2)[b]	2.35*	4.23	1	.04
Ethnicity (3)[b]	0.36	0.50	1	.481
Ethnicity (4)[b]	1.11*	4.31	1	.038
Deployment	0.42	2.06	1	.152

Note. Nagelkerke R^2 = .207 and classification = 64.1% for Step 1; Nagelkerke R^2 = .227 and classification = 68.4% for Step 2. * $p < .05$.
[a]Overall contribution of ethnicity.
[b]Dummy variables for ethnicity.

Reduced-sample regression (with ethnicity). The results of the reduced-sample regression with ethnicity are summarized in Table 9.

Table 9
Hierarchical Logistic Regression Analysis for Variables Predicting ADHD Symptoms (n = 117)

Variable	*B*	*Wald*	*df*	*p*
Step 1	χ^2 (6, 117) = 19.66, *p* = .003			
Age	0.60*	6.48	1	0.011
Family	-0.61	0.85	1	0.356
Ethnicity		7.77	4	0.100
Ethnicity (1)	21.59	0.00	1	1.00
Ethnicity (2)	2.32*	4.16	1	0.041
Ethnicity (3)	0.18	0.13	1	0.717
Ethnicity (4)	1.09*	4.30	1	0.038
Step 2	χ^2 (7, 117) = 21.76, *p* = .003			
Age	0.59*	6.21	1	0.013
Family	-0.54	0.66	1	0.417
Ethnicity		7.40	4	0.116
Ethnicity (1)	21.72	0.00	1	1.00
Ethnicity (2)	2.35*	4.23	1	0.04
Ethnicity (3)	0.36	0.50	1	0.481
Ethnicity (4)	1.11*	4.31	1	0.038
Deployment	0.42	2.06	1	0.152

Note. Nagelkerke R^2 = .207 and classification = 64.1% for Step 1; Nagelkerke R^2 = .227 and classification = 68.4% for Step 2. * $p < .05$.

When ethnicity is added to the model with a reduced sample to exclude incomplete data, the results are similar to those obtained in the full-sample analysis. Parental age significantly predicts reported ADHD symptoms in children (*B* = 0.59, *p* = 0.13). Family structure, deployment status, and ethnicity do not contribute significantly.

Based on the results of both the full-sample and reduced-sample regression analyses, the null hypothesis (there is no statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when covariates are considered [ethnicity, family structure, parents' age]) is retained.

Summary

In this chapter I presented the results of a quantitative survey study designed to examine the relationships between parental separation due to military deployment status and ADHD symptoms in children aged 3 to 15 in the southwestern region of California during the years 2001 to 2013. The data cleaning procedure was described and descriptive statistics were presented for individual demographics, family demographics, military demographics, and ADHD characteristics. There were 164 participants in the study, and no data were excluded on the basis of missing values or inclusion criteria. The majority of participants were male (57.9%), Caucasian (31.7%), and aged 35 or older (72.6%). Most of the families in this study were single-parent families (89.0%), and 81.1% of participants reported having children between the ages of 6 and 15 years old. Over half (58.6%) of participants were AD members of the military, and 76.2% had been deployed in the 48 months prior to data collection. There was a near-even distribution between participants who reported children with ADHD symptoms (57.9%) and those who did not (42.1%).

To answer the research questions, chi-squared and hierarchical logistic regression analyses were performed. Owing to a large number of participants who did not report ethnicity (n =43, 26.2%), regression analysis was performed both with and without ethnicity, using a reduced sample size (n = 117) for the analysis including ethnicity. The results indicate that, whether or not covariates were included in the model, and whether or not ethnicity was included in the model, there is not a statistically significant relationship between military deployment status and ADHD symptoms in children.

Therefore, the null hypotheses are not rejected for either of the two research questions. However, in both regression analyses, parents' age was found significantly to predict ADHD symptoms in children. As parents' age increased, so did ADHD symptoms in children, indicating that older parents were more likely to report having children with symptoms of ADHD.

The following chapter contains a discussion of the results of this study. The findings are interpreted and limitations of the study are disclosed. Additionally, recommendations are made on the basis of the results for further research. Finally, the implications for social change are addressed.

Chapter 5: Discussion, Conclusions, and Recommendations

Overview

Both the numbers of children experiencing a parent's deployment and the duration of parental absence during deployment are unique in the history of the U.S. military (Chandra, 2010). Among AD service personnel seeking pediatric mental and behavioral health services, visits for children with ADHD account for 30.1%--the largest segment of consultations (Gorman et al., 2010). These facts highlight the importance of understanding military children's health and well-being and assessing the effects of the duration of the parents' deployment on the children's academic, psychosocial, and family functioning. Military families with children need programs to assist them, and there is a vital demand for more behavioral health professionals (APA Task Force, 2007; Richardson et al., 2011). In this study, I sought to provide information to help guide the design and development of services and programs for military families raising a child with ADHD.

Using the diathesis-stress model, in the present quantitative study, I examined possible relationships between parent reported and exhibited symptoms of ADHD in children aged 3 to 15 in military families and deployment status (military deployment of greater than 6 months, military deployment of less than 6 months, or no military deployment) of AD service members. The goal was to determine whether a significant variance exists in children's exhibited or reported behaviors of hyperactivity, inattention, and behavioral challenges in relation to categories of ethnicity, family structure, and number of children in the household.

Using a demographic survey and parents' responses to the VADPRS to measure the study variables, I gathered data from 164 adult military participants sampled from military bases in the Southern California region. The predictor variable was parental separation due to military deployment status (families who have service members whose occupations require military deployment of greater than 6 months, military deployment of less than 6 months, or no military deployment). The covariates were ethnicity, family structure, and parents' age. The criterion variable was participants' child(ren)'s exhibited symptoms of ADHD (ADHD, non-ADHD). The following research questions guided the study:

Research Question 1: What is the relationship between military deployment status and ADHD symptoms?

$H_0$1*:* There is no statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

H_a1*:* There is a statistically significant relationship between military deployment status and symptoms of ADHD in children aged 3 to 15 from 2001 to 2010.

Research Question 2: What is the relationship between military deployment and symptoms of ADHD in children considering covariates?

$H_0$2*:* There is no statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered (ethnicity, family structure, parents' age).

H_a2*:* There is a statistically significant relationship between military deployment status and the symptoms of ADHD in children aged 3 to 15 from 2001 to 2010 when the following covariates are considered: ethnicity, family structure, and parents' age.

One hundred sixty-four individuals participated in the study. No data were excluded because of missing values or failure to meet inclusion criteria. More than half of participants were male (57.9%), Caucasian (31.7%), and 35 years of age or older (72.6%). Most of the families in this study were single-parent families (89.0%), with 81.1% having children between the ages of 6 to 15 years old. More than half (58.6%) of participants were AD members of the military, and 76.2% had been deployed in the 48 months prior to data collection. There was a near-even distribution of participants who reported children with ADHD symptoms (57.9%) and those who did not (42.1%).

Chi-square and hierarchical logistic regression analyses were performed. Because more than one-fourth (26%) of participants did not report their ethnicity, the logistic regression analysis was performed both with and without ethnicity, using a reduced sample size (n = 117) for the analysis including ethnicity. Results indicated no statistically significant relationship between military deployment status and ADHD symptoms in children, with or without the covariates of ethnicity and family structure. Therefore, the null hypotheses were retained for the two research questions. However, in both regression analyses, greater parental age significantly predicted reported ADHD symptoms in children, indicating that older parents were more likely to report having children with symptoms of ADHD. In the present and final chapter of this study, I provide an interpretation of the findings, implications for social change,

recommendations for action, and recommendations for further research.

Interpretation of Findings

In a recent retrospective cohort study of children in the Military Health System between the ages of 4 and 8, 34,205 (8.3%) had ADHD symptoms. Hisle-Gorman, Eide, Coll, and Gorman (2014) found that 8.3% (*n* = 34,205) had ADHD, a much lower proportion of children than in the present sample, where more than half had ADHD symptoms. This discrepancy between the present sample and that of Hisle-Gorman et al. is most probably attributable to the differences in study designs; whereas Hisle-Gorman et al. examined an entire population, I employed a convenience sample, which made it possible that participants whose children had ADHD symptoms would self-select. Further, Hisle-Gorman et al. found that children in their study who had ADHD experienced a 13% increase in mental and behavioral health care visits during parental deployments compared to when their parents were at home. In a related study by Gorman and Hisle-Gorman (2010a), outpatient visits for children between the ages of 3 and 8 for mental and behavioral health complaints increased by 11% when a parent was deployed. In the present results, the presence of ADHD symptoms, while greater in children whose parents had been deployed in the previous 48 months than in those reporting no deployment (59.1% and 61% vs 50%), was not statistically significant.

Chandra et al. (2010a) and Mansfield, Kaufman, Engel, and Gaynes (2011) reported that older children had more adjustment problems than younger adolescents did. Older children found it difficult to adjust to increased household responsibilities, time away from extracurricular activities, and helping the at-home parent during the

deployment (Chandra et al., 2010a). Present findings that older parents reported a higher presence of ADHD symptoms in their children than did younger parents is consistent with the above findings. It is possible that in the present study, older parental age was associated with having older children, as half of parents in this study reported having children aged 11 to 15. It is also possible that older parents in the present study had higher levels of education; this would be consistent with research showing that more educated parents are more likely to seek help for their children's mental health problems symptoms than are less educated parents (Young, 2012). The association of greater parental age and ADHD symptoms should be interpreted with caution, as the current study did not include data regarding parental education levels, and a possible association between children's' age and ADHD symptoms was not examined.

According to the diathesis-stress model, some individuals inherit a genetic susceptibility, or diathesis, which is incapable of initiating a disorder by itself. The central idea of the diathesis-stress model is that if susceptible individuals experience stress early in life, their systems become permanently sensitized, and they overreact to mild stressors for the rest of their lives (Pinel, 2009). This model also supports the idea that life events can contribute to the cause of negative social responses (Lange et al., 2005). As applied to this study, children who are biologically at risk could begin exhibiting symptoms associated with ADHD in response to excessive, negative stress in the home and an increase in unmet social needs due to parental absence while deployed. It is also possible that previously diagnosed children could experience exacerbations of their symptoms in response to parental deployment. On this basis, it was predicted that a

parent's deployment status would have a significant relationship with the presence of ADHD symptoms in children. Although the results of this study were not statistically significant, greater proportions of parents who had been deployed during the previous 4 years reported ADHD symptoms in their children than did parents who had not been deployed.

Implications for Social Change

The results of this study may be used to inform military families of the possible relationship between behaviors associated with ADHD and deployment to provide supportive social and academic services. Specifically, findings of this study help to expand the very limited body of research on the relationships between parental deployment and children's ADHD symptoms. Not only are older children more aware of the dangers inherent in deployment than are younger children, but they are also called upon to assume responsibilities at home at a time when school and social pressures may be more intense. Moreover, older children with a diagnosis of ADHD may find that exacerbations in symptoms due to the stress of parental deployment may experience additional educational and adjustment difficulties. Support programs that target older military parents and, by extension, older children could reduce the burdens experienced by these children and thereby improve academic achievement and reduce their behavioral problems. Such individual benefits would in turn benefit society by reducing the cost of delinquency and remediation.

Recommendations for Action

Results of the current study will be disseminated to personnel at my workplace (Marine Corps Community Services Prevention and Education). In my capacity as Lead Mental Health Educator at Behavioral Health Strategic Solutions, I will prepare brochures and client outreach materials to raise parents' awareness of the possibility that ADHD and other mental health symptoms may be exacerbated or triggered by a parent's military deployment.

The RAND researchers noted that many military children perceive the school as a refuge or "safe haven." This perception of schools could present an opportunity for directing and implementing interventions for children experiencing parental deployment (Chandra et al., 2010; Richardson et al., 2011). Connections between home and school are healthy for children in general and can be especially valuable for children who experience family stress due to deployment. I plan to provide information and outreach to educators about the effects of deployment and how schools can aid military children by providing social and academic support and by encouraging parental involvement.

Existing research shows that the wellbeing of parents and children are intimately related (Lester et al., 2010). Military parents experiencing difficulties almost invariably have children who are also experiencing difficulties (Barker & Berry, 2009; Lester et al., 2010). However, military culture to some degree prohibits soldiers from seeking help for mental health problems in particular (Braswell & Kushner, 2012), which may serve to impose a greater symptom burden on children of troubled parents. I intend to disseminate the current findings to colleagues in the services in the hope that parents who are having

mental health problems may seek help, if not for their own sake, then for their children's sakes.

Recommendations for Further Study

As noted previously, the present study contributes to the body of knowledge regarding the impact of military deployment on children and families. Current findings, while suggestive of a link between greater parental age and higher ADHD symptoms in children, need to be confirmed using larger, random samples and testing additional variables, such as children's age and parents' educational attainment, for possible association with ADHD.

One of the limitations of the current study is that it relied on parents' reports of children's symptoms rather than direct measurement of children's behavior, making it possible that parents could have systematically over- or under-reported children's symptoms. Future studies could overcome this limitation by administering a screening test for ADHD to children of participants or requiring that parents provide documentation of their child's diagnosis. Such a strategy would ensure the accuracy of this crucial piece of data.

Additional research is needed to understand the impact of combat-related injury and disability on children's mental health, including ADHD symptoms. Future studies should examine both the immediate and long-term mental health correlates of having a parent with one or more combat-related problems, such as traumatic brain injury, posttraumatic stress disorder, amputation, and spinal cord injury.

In the current study, I examined relationships between ADHD symptomology and AD military status. Omitted from the study were members of National Guard units and their families, yet literature has indicated that the impact of deployment on such individuals' families may be greater than on AD military families (Gewirtz et al., 2010; Khaylis et al., 2011). Further research should be conducted to assess the prevalence of ADHD and other disorders among children of National Guard personnel who have been deployed.

Another question worthy of study is whether the parent's branch of service or military occupational specialty (MOS) are related to children's ADHD symptoms when the parent is deployed. The current sample drew from the region of Southern California, where there are a considerable number of military bases representing several branches of the services. However, I did not inquire regarding participants' branch of service or MOS, so it is not known whether these variables pose more or less risk for children.

The diathesis-stress model itself would be an interesting topic of study in this regard as well. Central to the model is the concept of a stressor that triggers an individual's predisposition to a disorder. Researchers have assumed that it is the fact of parental deployment itself that is the stressor; however, this assumption remains untested and unrefined. Additional research on the aspects of parental deployment that children find most stressful, such as that conducted by Chandra et al. (2010a), is needed. Results of such research could be used to develop a survey that could be used to assess possible associations between types of stressors and child symptoms and outcomes.

Conclusion

Children of parents who are or who have been deployed militarily are, in some respects, hidden casualties of war. In addition to facing the possibility that their parent will return home dead, maimed, or otherwise changed by the combat experience, these children carry the burdens of increased responsibility at home, social isolation from nonmilitary peers, and the ambiguity of having a parent who is missing but not permanently lost. Such burdens take a toll in the form of increased emotional and social challenges. For those children who have an existing mental health disorder or a predisposition to such a disorder, the burden and the toll are that much greater. It is my hope that this research has contributed to helping these children and families cope and thrive, regardless of the challenges they may face.

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Appendix A: Demographic Questionnaire for Parents and Caregivers

To the best of your knowledge, please respond to the questions

Your Age __18-25 __26-35 __36-45
__46-55+

Gender __ Male __Female
__Transgender Male __Transgender Female

Military Status __Active Duty __Reserve __Retired
__Spouse __Unmarried Parent of Military Child

Number of Child(ren) __0-3 __4-6 __7-9

Age(s) of Child(ren) __0-5 __6-10 __11-15

Number of Children who exhibit or report hyperactivity, inattention, or behavioral challenges? __0-3 __4-6 __7-9

Family Structure __dual parent __single parent
__single parent male __single parent female

Deployment History within the last 48 months __0-6 Month __7-12
__None

Frequency of Travel (no. of times per year) __Once __Twice __Thrice __Four times

Duration of Travel __< 1 month __ 1-3 months __3-6 months
__6-9 months __>9 months

Reasons for travels __Deployment __Non-deployment

Primary Ethnicity __African American __ Asian __Caucasian
__Hispanic __ Native American

Has any child(ren) been treated for and/or consistently exhibited or reported experiencing any of the following for a period of over 3 months? Please check all that apply:

__Emotional Disorders __Academic Performance Struggles that require special education programs __Social challenges

Appendix B: Instrumentation Permission

Norman CIV Giovanda

From: Wolraich, Mark L. (HSC) [redacted]
Sent: Friday, August 08, 2014 13:25
To: Norman CIV Giovanda
Subject: RE: Vanderbilt ADHD Parent Rating scale

I am the author of the Vanderbilt scales and they are in the public domain so that you can use them in your study and you have my permission.

-----Original Message-----
From: Norman CIV Giovanda [mailto[redacted]]
Sent: Friday, August 08, 2014 2:57 PM
To: Wolraich, Mark L. (HSC)
Subject: Vanderbilt ADHD Parent Rating scale

Good afternoon Sir,

My name is Giovanda Norman. I am completing my dissertation proposal for URR review. An item that was recently mentioned is that I need to have permission to use the Parent rating scale to measure the presence of ADHD symptoms. I will not be interacting with or diagnosing. My study is measuring the presence of "symptoms of ADHD". I read some of your studies and research methods and noticed you seem to be interested in a similar population to the group I am accessing for my study. Are you able to point me in the right direction? My contact information is Giovanda Norman [redacted].

Thank you for your time.

Warmest Regards,

Ms. Giovanda D. Norman
Clinical Psychologist-Licensure Track, Doctoral Student Walden University giovanda.norman@waldenu.edu

"We must become the change we want to see" Mahatma Gandhi

1

Appendix C:

VANDERBILT ADHD DIAGNOSTIC PARENT RATING SCALE

Child's Name: _____ Today's Date: _____

Date of Birth: _____ Age: _____

Grade: _____

Each rating should be considered in the context of what is appropriate for the age of your child.

Frequency Code: 0 = Never 1 = Occasionally 2 = Often 3 = Very Often

1. Does not pay attention to details or makes careless mistakes, for example homework 0 1 2 3
2. Has difficulty sustaining attention to tasks or activities 0 1 2 3
3. Does not seem to listen when spoken to directly 0 1 2 3
4. Does not follow through on instructions and fails to finish schoolwork (not due to oppositional behavior or failure to understand) 0 1 2 3
5. Has difficulty organizing tasks and activities 0 1 2 3
6. Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort 0 1 2 3
7. Loses things necessary for tasks or activities (school assignments, pencils or books) 0 1 2 3
8. Is easily distracted by extraneous stimuli 0 1 2 3
9. Is forgetful in daily activities 0 1 2 3
10. Fidgets with hands or feet or squirms in seat 0 1 2 3
11. Leaves seat when remaining seated is expected 0 1 2 3
12. Runs about or climbs excessively in situations when remaining seated is expected 0 1 2 3
13. Has difficulty playing or engaging in leisure/play activities quietly 0 1 2 3
14. Is "on the go" or often acts as if "drive by a motor" 0 1 2 3
15. Talks too much 0 1 2 3
16. Blurts out answers before questions have been completed 0 1 2 3
17. Has difficulty waiting his/her turn 0 1 2 3
18. Interrupts or intrudes on others (e.g., butts into conversations or games) 0 1 2 3
19. Argues with adults 0 1 2 3
20. Loses temper 0 1 2 3
21. Actively defies or refuses to comply with adults' requests or rules 0 1 2 3
22. Deliberately annoys people 0 1 2 3
23. Blames others for his or her mistakes or misbehaviors 0 1 2 3
24. Is touchy or easily annoyed by others 0 1 2 3

25. Is angry or resentful 0 1 2 3
26. Is spiteful and vindictive 0 1 2 3
27. Bullies, threatens, or intimidates others 0 1 2 3
28. Initiates physical fights 0 1 2 3
29. Lies to obtain goods for favors or to avoid obligations (i.e., "cons" others) 0 1 2 3
30. Is truant from school (skips school) without permission 0 1 2 3
31. Is physically cruel to people 0 1 2 3
32. Has stolen items of nontrivial value 0 1 2 3
33. Deliberately destroys others' property 0 1 2 3
34. Has used a weapon that can cause serious harm (bat, knife, brick, gun) 0 1 2 3
35. Is physically cruel to animals 0 1 2 3
36. Has deliberately set fires to cause damage 0 1 2 3
37. Has broken into someone else's home, business, or car 0 1 2 3
38. Has stayed out at night without permission 0 1 2 3
39. Has run away from home overnight 0 1 2 3
40. Has forced someone into sexual activity 0 1 2 3
41. Is fearful, anxious, or worried 0 1 2 3
42. Is afraid to try new things for fear of making mistakes 0 1 2 3
43. Feels worthless or inferior 0 1 2 3
44. Blames self for problems, feels guilty 0 1 2 3
45. Feels lonely, unwanted, or unloved: complains that "no one loves him/her" 0 1 2 3
46. Is sad, unhappy, or depressed 0 1 2 3
47. Is self-conscious or easily embarrassed 0 1 2 3

_____

PERFORMANCE

	Problematic		Average	Above Average	
1. Overall Academic Performance	1	2	3	4	5
a. Reading	1	2	3	4	5
b. Mathematics	1	2	3	4	5
c. Written Expression	1	2	3	4	5

PERFORMANCE

	Problematic		Average	Above Average	
2. Overall Classroom Behavior	1	2	3	4	5
a. Relationship with peers	1	2	3	4	5
b. Following Directions/Rules	1	2	3	4	5
c. Disrupting Class	1	2	3	4	5
d. Assignment Completion	1	2	3	4	5
e. Organizational Skills	1	2	3	4	5

Scoring Instructions for the ADTRS

***Predominately inattentive subtype** requires 6 or 9 behaviors, (scores of 2 or 3 are positive) on items 1 through 9, and a performance problem (scores of 1 or 2) in any of the items on the performance section.

***Predominately hyperactive/Impulsive subtype** requires 6 or 9 behaviors (scores of 2 or 3 are positive) on items 10 through 18 and a problem (scores of 1 or 2) in any of the items on the performance section.

***The Combined Subtype** requires the above criteria on both inattention and hyperactivity/impulsivity.

***Oppositional-defiant disorder** is screened by 4 of 8 behaviors, (scores of 2 or 3 are positive) (19 through 26).

***Conduct disorder** is screened by 3 of 15 behaviors, (scores of 2 or 3 are positive) (27 through 40).

***Anxiety or depression** are screened by behaviors 41 through 47, scores of 3 of 7 are required, (scores of 2 or 3 are positive).